

LONDON- WEST MIDLANDS ENVIRONMENTAL STATEMENT

Volume 5 | Technical Appendices

CFA16-22 | Ladbroke to Handsacre
Ecological baseline data: mammals
(EC-003-003)
Ecology

November 2013

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Department
for Transport

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Appendix EC-003-003

Environmental topic:	Ecology	EC
Appendix name:	Ecological baseline data (CFA16 to CFA22): mammals	003-003
Community forum areas:	CFA16/Ladbroke and Southam CFA17/Offchurch and Cubbington CFA18/Stoneleigh, Kenilworth and Burton Green CFA19/Coleshill Junction CFA21/Drayton Bassett, Hints and Weeford CFA20/Curdworth to Middleton CFA22/Whittington to Handsacre	253

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1 Introduction

1.1.1 This document is an appendix which forms part of Volume 5 of the Environmental Statement (ES) for the Proposed Scheme. It details ecological baseline data collected for the following community forum area (CFA):

- CFA16: Ladbroke and Southam;
- CFA17: Offchurch and Cubbington;
- CFA18: Stoneleigh, Kenilworth and Burton Green;
- CFA19: Coleshill Junction;
- CFA20: Curdworth to Middleton;
- CFA21: Drayton Bassett, Hints and Weeford; and
- CFA22: Whittington to Handsacre.

1.1.2 The document should be read in conjunction with Volume 2 (Community forum area reports), Volume 3 (Route wide effects) and Volume 4 (Off-route effects).

2 Bats

2.1 Introduction

- 2.1.1 This section of the appendix presents details of baseline information relating to bats relevant to the section of the Proposed Scheme that will pass through CFA16 to CFA22 inclusive.

2.2 Methodology

- 2.2.1 Details of the standard methodology utilised for bat surveys are provided in the Ecology technical note: Ecological field survey methods and standards (Volume5: Appendix CT-001-000/2).
- 2.2.2 Bat records for 10 km either side of the centre-line of the route of the Proposed Scheme were obtained from the following:
- Staffordshire Ecological Record;
 - Warwickshire Biological Records Centre (WBRC);
 - Northamptonshire Biological Records Centre;
 - Warwickshire, Coventry and Solihull Biodiversity Action Plan (BAP); and
 - Staffordshire BAP.
- 2.2.3 The combined use of desk study and field surveys has been used to assist the identification of sites and features of value for bats, including landscape-scale ecological features, (e.g. hedgerows, watercourses, and disused railway lines) that provide habitat connectivity and potential commuting corridors.
- 2.2.4 An initial assessment was conducted to identify potential roosting features and suitable habitat for bats within 250m of the land required for construction of the Proposed Scheme. The assessment included a review of Extended Phase 1 habitat survey results (i.e. to include scoping for the presence or potential to support notable species). Where access has not been available for field survey, data from pre-existing habitat surveys (where available) has been utilised to provide a description of habitats relevant to the assessment. In addition, interpretation of aerial photography has been used to provide an indication of the likely habitats present.
- 2.2.5 The initial assessment identified a number of features that could provide habitat for roosting, foraging and commuting bats. Many potential roosting locations (buildings and trees) are linked to by linear features and/or continuous habitat such as hedgerows, watercourses and woodland edge, which are commonly used by many commuting bats to navigate their way through the landscape between key roosting and foraging areas.
- 2.2.6 For sound analysis of transect and static survey results calls parameters followed Jon Russ (2012)¹.

¹ Russ, J (2012), *British Bat Calls: A Guide to Species Identification*. Pelagic Publishing.

2.3 Deviations, constraints and limitations

- 2.3.1 Survey efforts have been limited to land where access permission has become available throughout the survey period. Due to access restrictions, a full survey season has not been completed on some sites.
- 2.3.2 There are a number of large areas across four areas where access was not granted and survey coverage was not possible. The features of potential interest for bats within these areas with no access were as follows:
- CFA16 Ladbroke and Southam – arable fields with large water bodies, surrounded by scrub and deciduous woodland; tree lined hedgerows and three parcels of deciduous woodland;
 - CFA17 Offchurch and Cubbington – arable fields with tree lined hedgerows, scattered trees, ponds and ditches;
 - CFA18 Stoneleigh, Kenilworth and Burton Green – arable fields with tree lined hedgerows; and
 - CFA21 Drayton Bassett, Hints and Weeford – mainly mixed farming, both pasture and arable, with tree lined hedgerows, ponds and pockets of deciduous woodland.
- 2.3.3 In some cases the survey boundary for bat surveys was extended beyond 100m from the land required for construction of the Proposed Scheme. For example, access for field surveys was not available within land required for the construction of the Proposed Scheme at the fish ponds and surrounding woodland near Lower Radbourne (within Ladbroke and Southam area (CFA16)) which lie adjacent to an unnamed tributary of the River Itchen. This complex of habitats is considered to have high potential to support foraging bats and to be used as a commuting corridor. To gather information on the assemblage of bat species within this area a static survey (030-BA2-120001) was undertaken just to the north-east of the fish ponds in an area with strong habitats links to the fish ponds. The static detector was positioned adjacent to a small water body along the unnamed tributary of the River Itchen.
- 2.3.4 Thorpe Rough, an area of ancient woodland situated just east of Long Itchington and Ufton Woods, lies over 250m east of the area of land required for the construction of the Proposed Scheme. However, an assessment of tree roosts, including ground level and detailed (climbing) inspections, was undertaken within the woodland. The inclusion of this wood in the study area was due to the strong connectivity of the woodland to Long Itchington and Ufton Woods SSSI and the confirmation of barbastelle activity within habitats adjacent to the southern end of the wood. The information was gathered primarily to inform an assessment on the distribution of barbastelle within the area.
- 2.3.5 Desk study records provide valuable information for assessment but have some limitations. For example, the reliability of biological records is unknown because factors such as recorder expertise, accuracy of species identification and accuracy of recorded location, cannot be verified. There is usually some bias within records; for example, records of bats which roost in houses such as pipistrelle and brown long-eared bats may be over-represented within the records compared to species typically

associated with tree roosts i.e. noctule, as these are less often encountered by the general public. It is important to note that the records do not provide a comprehensive list of all species in the search area. A lack of records for a defined geographical area does not necessarily mean that there is a lack of species; the area may simply be under recorded.

Trees

- 2.3.6 Approximately 50 of the trees climbed at Ravenshaw Wood and Black Slough (woodland) near Handsacre (within Whittington to Handsacre area (CFA22)) were undertaken during the winter months of 2012. Whilst there was a reduced likelihood of encountering bats in accessible cavities during those months this approach was taken to rule out, or downgrade, a proportion of the trees from high/medium to low roost potential at an early date
- 2.3.7 Where accessible all trees within 100m of the land required for the construction of the Proposed Scheme within Ravenshaw Wood and Black Slough were subject to a ground assessment and categorised according to bat roost potential categories. Following the ground level tree assessments further survey work, in the form of a backtracking survey, was undertaken to provide additional information on the presence or likely presence of bat roosts within areas of woodland at Ravenshaw Wood and Black Slough. The backtracking surveys followed the guidance within the Technical Note HS2 Ecological Surveys: Field Survey Methods and Standards included within the SMR Addendum (Volume5: Appendix CT-001-000/2). The survey information was collated to identify potential commuting routes and roost sites.

Buildings and structures

- 2.3.8 Where a building was identified at risk of demolition but permission for access was withheld, an initial assessment was completed using alternative available data sources. These included aerial imagery, Google Streetview imagery and data from ecological surveys carried out in support of planning applications. These initial assessments have in some cases identified the requirement for detailed inspections which have been not been completed within 2012 and 2013 due to access restrictions.
- 2.3.9 Some buildings were not available for field surveys of potential building roosts due to access limitations, including:
- Curdworth and Middleton (CFA20): Parklands Stud; Outbuildings; Board Cottages and Coleshill Cottages (exc. No. 2);
 - Ladbroke and Southam (CFA16): Warehouse/Workshop at Harp Farm; Car sales room, cafe and bungalow;
 - Stoneleigh, Kenilworth and Burton Green (CFA18): Outbuilding to the rear of 301 Cromwell Lane;
 - Drayton Bassett, Hints and Weeford (CFA21): 17 Flats Lane; 12 and 13 Flats Lane; 5, 7, 9 and 11, 2 and the annex to No. 2 at Knox's Grave Lane;
 - Coleshill Junction (CFA19): The Old Barn Guesthouse; Warehouse, Highway point, Coleshill; The Homestead, Coleshill; 87 Attleboro Lane; 62-76 Attleboro Lane excluding No. 72 which was accessed for survey; and

- Whittington to Handsacre (CFA22): Airfield Buildings, Streethay; Rough Stockings; and Shaw Lane Overbridge.

- 2.3.10 The number of maternity roosts confirmed and the levels of commuting and foraging activity by bats may have been reduced as a result of poor weather during the summer of 2012. The Bat Conservation Trust, through the work of their bat helpline service, reported that in May 2012 there was a 50% increase in calls relating to bat care thought to have potentially been caused by a lack of insects and poor hunting conditions resulting from unseasonal high levels of rain and wind. A drop in the number of calls regarding maternity roosts was also reported as maternity colonies were reported late in forming, while some known maternity roosts remained unused in 2012. The spring of 2013 also had poor weather with increased levels of rain and low temperatures².
- 2.3.11 Prevailing weather conditions through 2012 and early summer 2013 have likely had implications on breeding productivity of bats within the UK and a certain proportion of maternity roosts may have gone unused throughout 2012 and 2013. However, the surveys in 2012 and 2013 have provided a suitable baseline on the occurrence of bat roosts within the land required for construction of the Proposed Scheme.

Bat activity surveys

- 2.3.12 It is assumed that activity surveys allow representative sampling of bat activity within 100m of the land required for construction of the Proposed Scheme which facilitates an understanding of species presence and patterns of activity. However, the measurements of activity can only be used to provide an index of activity and cannot be used to determine absolute abundance of bats using an area.
- 2.3.13 Land access restrictions prevented the completion of a full seven nights of monitoring, some months at some static survey locations. In these instances, a minimum of three nights of survey was often still able to be achieved within a single month and are still considered appropriate for an assessment of bat activity.
- 2.3.14 There are inherent limitations when surveying bats using ultrasonic³ detectors, and particularly within woodland. Ultrasound, unlike audible sound, is attenuated rapidly in air. Many echolocation calls are in the 40kHz to 60kHz region, where air attenuation is over 1dB⁴ per metre. Sound absorption increases exponentially with frequency and a bat echolocating at 30kHz is unlikely to have a range exceeding 30m, with the range decreasing to 10m at 100kHz. Some bats call louder than others, notably the noctule bat, which calls at the lowest frequency of any UK bat at around 20kHz where excess attenuation is around 0.5dB per metre. It is frequently audible at around 100metres (Altringham, 2003)⁵.
- 2.3.15 In practice this means that bat detectors do not detect most bats calling from 30kHz and upwards at distances over 30m. Some species, such as brown long-eared bat, make very directional and quiet calls and can only easily be detected when the

² Bat Conservation Trust News <http://www.bats.org.uk/news.php/157/> Accessed: October 2012.

³ The limits of human hearing are from around 15 Hertz (15 cycles per second) to 15kHz (15,000 cycles per second). UK bat species echolocate using frequencies from around 17kHz to around 110kHz. Sounds at higher frequencies than the limit of human hearing are referred to as ultrasound.

⁴ dB = decibels, a measure of the level of sound.

⁵ Altringham, J.D. (2003), *Bats: Biology and Behaviour*. Leeds University.

detector is facing the source of call (i.e. the bat) and at close range. Table 1 indicates the maximum distances of ultrasonic detection for different bat species which are likely to be in proximity to the project site based on geographic location and habitats present. It should be noted that this data is from surveys carried out on the continent and using Pettersson Elektronik bat detectors and is therefore not directly comparable but is indicative. Detection distances can also be affected in the field by weather conditions.

Table 1: Distances of Ultrasonic Detection for Bats Likely to be within Proximity to the Proposed Scheme⁶

Species	Generally forages close to habitat	Generally have high flight (>40m high)	Generally have low flight (i.e. almost ground level)	Maximum distance of ultrasonic detection (m)
Daubenton's bat	Yes	Yes	Yes	30
Natterer's bat	Yes		Yes	20
Whiskered bat	Yes		Yes	15
Brandt's bat	Yes	Yes	Yes	20
Noctule		Yes		100
Leisler's bat		Yes		60-80
Serotine		Yes		50
Common pipistrelle	Yes	Yes	Yes	30
Soprano pipistrelle	Yes	Yes	Yes	30
Nathusius' pipistrelle	Yes	Yes	Yes	30-40
Brown long-eared	Yes	Yes	Yes	30
Barbastelle	Yes		Yes	30

Barbastelle bat survey (trapping and radio-tagging)

- 2.3.16 Licensed works, including the trapping and radio tagging of bats, commenced between 2 August 2013 and 6 September 2013 to investigate the distribution of bats, with particular focus on the barbastelle (*Barbastella barbastellus*) within and in the vicinity of Long Itchington and Ufton Woods SSSI and immediate surroundings.
- 2.3.17 The route of the Proposed Scheme runs beneath the SSSI in tunnel. However, due to the rarity of barbastelle bat and its status as an Annex II species⁷ it was important to gain information on how this species used the area. The licensed works allowed for individuals of other species of bat caught to be radio tagged and tracked.

⁶ Information taken from Rodrigues, L., L. Bach, M.-J. Dubourg-Savage, J. Goodwin & C. Harbusch (2008), Guidelines for consideration of bats in wind farm projects. EUROBATs Publication Series No. 3 (English version). UNEP/EUROBATs Secretariat, Bonn, Germany, 51 pp. (Table 2: Bats' behaviour in relation to wind farms, p 48).

⁷ The Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (the Habitats Directive), is the means by which the European Community meets its obligations as a signatory of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention). The provisions of the Directive require Member States to introduce a range of measures including the protection of species listed in the Annexes; to undertake surveillance of habitats and species and produce a report every six years on the implementation of the Directive.

- 2.3.18 To further inform the assessment of barbastelle activity within the area activity and static surveys were undertaken until the beginning of September 2013. The trapping and radio-tagging work is reported in Volume 5: Appendix EC-006-003.

2.4 Baseline

Overview

- 2.4.1 The following bat species are found within the UK and have been recorded using habitats within the land required for the construction of the Proposed Scheme although the distribution of some species varies along the route of the Proposed Scheme. To provide context for the results of field surveys the habitat requirements for each species and a summary of the known status of bat species within England and Warwickshire are described below. The status of bat species within Staffordshire is currently unavailable. The references used for the status of bats species are as follows:

- Battersby, J. (2005). UK Mammals: Species Status and Population Trends First Report by the Tracking Mammals Partnership. JNCC/Tracking Mammals Partnership: Peterborough;
- Warwickshire County Council; Warwickshire and Solihull BAP: Species Action Plan: Bats⁸; and
- Bat Conservation Trust; Species and survey coverage [for information on Alcaethoe]⁹.

Common Pipistrelle (Pipistrellus pipistrellus)

- 2.4.2 Common pipistrelle is widespread and common across the UK and Warwickshire with an estimated UK wide population of 2,430,000 (country breakdowns not available). The species have undergone substantial population declines of around 55% since the 1960s. However, divisions of the species in 1999 into the common and soprano pipistrelle, makes interpretation of historic trends difficult. At present the species appears to have stable populations throughout the UK.
- 2.4.3 A high proportion of common pipistrelle colonies are found to roost in buildings.

Soprano Pipistrelle (Pipistrellus pygmaeus)

- 2.4.4 Soprano pipistrelle is widespread and common across the UK and Warwickshire with an estimated UK wide population of 1,300,000 (country breakdowns not available). Interpretation of historic trend data is not possible due to the relatively recent division from the common pipistrelle. Current populations appear to be stable across the UK.
- 2.4.5 The soprano pipistrelle is considered to be more reliant on aquatic habitats than the common pipistrelle. Like the common pipistrelle the soprano pipistrelle also preferentially roosts in buildings.

⁸ [http://www.warwickshire.gov.uk/Web/corporate/pages.nsf/Links/6E13119018BC4EEC80256E90004C41AC/\\$file/Bats.pdf](http://www.warwickshire.gov.uk/Web/corporate/pages.nsf/Links/6E13119018BC4EEC80256E90004C41AC/$file/Bats.pdf); Accessed: September 2012.

⁹ http://www.bats.org.uk/pages/survey_and_species_coverage.html; Accessed: November 2012.

Brown long-eared bat (Plecotus auritus)

- 2.4.6 Brown long-eared bat is widespread and common across the UK and Warwickshire, within England alone there is an estimated population of 155,000. In the beginning of the 20th century the species was one of the most widely distributed and common throughout the UK, but has undergone a long-term decline in relative abundance and distribution.
- 2.4.7 Brown long-eared bat is primarily a woodland species which feeds by gleaning prey off of foliage. The species does not like to cross open spaces preferring instead to commute and forage along hedgerows and within woodland habitats. Brown long-eared bats also like to roost in large loft spaces.

Nathusius' Pipistrelle (Pipistrellus nathusii)

- 2.4.8 Nathusius' bats are rare throughout Britain with UK population numbers estimated to be approximately 16,000.
- 2.4.9 The species was long considered a vagrant in the UK but discovery's of breeding colonies in Northern Ireland, England and Wales confirm that it is a UK resident.
- 2.4.10 Habitat requirements are unknown but within Europe (where the species is relatively common) the species is often found foraging over water bodies.
- 2.4.11 The status of Nathusius' pipistrelle is unknown within Warwickshire.

Alcathoe bat (Myotis alcathoe)

- 2.4.12 The alcathoe bat was only confirmed as a resident species in the UK in 2010 due to its similarity to the whiskered and Brandt's bat species. Therefore it is likely to have been overlooked in the past. There are insufficient data available at present to allow calculation of population trends.
- 2.4.13 The status of alcathoe bat is unknown within Warwickshire.

Noctule (Nyctalus noctula)

- 2.4.14 The noctule is considered to be widespread and common across Warwickshire. On a UK wide basis the species is considered to be generally uncommon with populations being more numerous in well wooded areas. In England the population is estimated to be 45,000.
- 2.4.15 The species was considered to be widespread in most of England in the early 20th century but observations suggest a substantial decline since the 1940s. The current population appears to be stable.
- 2.4.16 Noctules are a tree dwelling species, often roosting in large colonies in the hollow trunks or branches of old or dead trees. Woodland management can cause a problem to the species if it leads to the loss of these suitable roost sites.

Daubenton's (Myotis daubentonii)

- 2.4.17 The Daubenton's bat is widespread and common throughout Warwickshire and common throughout much of the UK. The population in England is estimated to be 95,000.

2.4.18 At the turn of the 20th century the species was considered to be abundant in England and survey results indicated that populations of this species are increasing.

2.4.19 The species feeds and commutes mainly over riparian habitats and as such is a good indicator of riparian habitat and water quality.

Whiskered/Brandt's (Myotis mystacinus/Myotis brandtii)

2.4.20 Whiskered and Brandt's bats were only separated as distinct species in 1970, thus much of the information previously applied to whiskered bats might relate to either species.

2.4.21 In Warwickshire the whiskered bat is widespread but less common. It is locally distributed across the UK with estimated populations of 30,500 in England.

2.4.22 Brandt's bat is local and rare throughout Warwickshire and is only common in west and north of England with populations estimated at 22,500.

2.4.23 Surveys of whiskered and Brandt's bats indicate that the populations are stable. Requirements of both species are largely unknown.

Natterer's (Myotis nattereri)

2.4.24 The Natterer's bat may be widespread but uncommon within Warwickshire. Throughout much of the UK the species is fairly common with an estimated population of 70,000 throughout England.

2.4.25 Due to difficulties in distinguishing between *Myotis* species historical population trends are unknown. Results of hibernation surveys suggest that there has been a significant increase in UK populations.

2.4.26 Habitat requirements of this species are largely unknown although they are associated with old large stone buildings with large timbers.

Leisler's (Nyctalus leisleri)

2.4.27 Leisler's bat is found to occur in south Warwickshire where the populations are local and rare. The species is widespread throughout the UK but is scarce throughout England with estimated population numbers of 9,750.

2.4.28 It is thought that numbers of Leisler's may be increasing throughout the UK although historic trends are not known. Overall the species appears to be at low density with few breeding colonies recorded in Britain (common populations are found in Northern Ireland).

2.4.29 Habitat requirements for the species are largely unknown in England but populations in Northern Ireland have been encountered roosting in houses.

Serotine (Eptesicus serotinus)

2.4.30 Serotine populations are local and rare within south Warwickshire although widespread across southern Britain. There is an estimated population of 15,000 within England.

2.4.31 This species has always had a restricted distribution and been considered a rare bat with records mainly from southern England. However the species is a crevice dwelling

bat that generally forms small colonies with its UK range and may have been under recorded in the past. Historic trends are not clear but there is some evidence to suggest serious declines in populations. Currently the population is considered to be stable.

- 2.4.32 Serotine bats are found to roost almost exclusively in buildings.

Barbastelle (Barbastella barbastellus)

- 2.4.33 Barbastelle bat is widespread but rare throughout the UK with estimated population numbers of 4,500 in England. The species occurs in rare and local populations in south Warwickshire.

- 2.4.34 At the beginning of the 20th century the small numbers of species were known to be widely distributed in southern England and parts of Wales. The number of records for the species declined after a peak in the 1950s and 1960s suggesting a population decline.

- 2.4.35 Barbastelle is known to roost in buildings and under tree bark, frequently changing roost sites.

Lesser horseshoe (Rhinolophus hipposideros)

- 2.4.36 Lesser horseshoe has been recorded within Warwickshire but was not confirmed to be using habitats within land required for the construction of the Proposed Scheme.

- 2.4.37 Lesser horseshoe bats are rare and endangered within the UK with estimated population numbers of 9,000 in England. Local and rare populations are found in south Warwickshire however the species was not included in records from Warwickshire Biological Records Centre within 10 km of the route of the Proposed Scheme.

CFA16 Ladbroke and Southam

Overview of bat species status in this area

- 2.4.38 Bat species are not listed within the notification of any of the statutory sites located within 5km of the route of the Proposed Scheme.
- 2.4.39 Three Local Wildlife Sites (LWS) have bats (species unspecified) noted within their citations: River Avon and Tributaries LWS, Jock's Meadows LWS and Print Wood LWS.
- 2.4.40 Print Wood LWS is a medium-sized block of semi-natural ancient deciduous woodland located in a rural area within the parish of Long Itchington. Bats are listed as present but no species list provided. Isolated in open farmland the wood is linked to the Grand Union Canal via Ridgeway Lane (a track which forms part of Centenary Way). The site is close (less than 1km) to Long Itchington and Ufton Woods Site of Special Scientific Interest (SSSI) and Thorpe Rough, an area of ancient woodland which has connectivity with the SSSI. The citation makes reference to strong habitat connections along the Grand Union Canal between Print Wood LWS and Long Itchington and Ufton Woods SSSI making it likely that bats present within Print Wood LWS may move between these two areas of woodland for roosting, commuting and foraging.
- 2.4.41 The River Avon and its tributaries form an essential role as important habitats in their own right and equally importantly as an arterial network of waterways and wildlife

corridors. Bats utilising the River Avon and its tributaries may also use the Grand Union Canal, crossed by the route of the Proposed Scheme, as the two watercourses have strong habitat connectivity, particularly outside of the land required for the construction of the Proposed Scheme to the west.

- 2.4.42 The landscape within this area is dominated by large arable fields with occasional hedgerows; hedgerow trees and overall woodland is sparse. The bat interest within the area is increased by a number of features with potential to support roosting and commuting/foraging bats and strong habitat links enable dispersal of bat species between habitats both within and outside of the land required for the construction of the Proposed Scheme. Habitat features with the potential to support higher densities of bat activity include the Oxford Canal, the River Itchen, two unnamed tributary watercourses of the River Itchen near the fish ponds at Lower Radbourn and an unnamed tributary watercourse of the River Itchen near Ladbroke Fox Covert. There are also ponds within and outside of the land required for construction of the Proposed Scheme which have the potential to provide foraging habitat for bats.
- 2.4.43 The route of the Proposed Scheme passes through some areas of woodland including Long Itchington and Ufton Woods SSSI and Windmill Hill Spinney which have potential to support roosting, foraging and commuting activity. The route of the Proposed Scheme also passes through an area of parkland associated within Dallas Burston Polo Club towards the north-western end of the area. This area of parkland has scattered mature trees and large water bodies and is bound to the west by the ancient woodland, Thorpe Rough. Strong habitat links provide potential commuting routes between Dallas Burston Polo Club and Long Itchington and Ufton Woods SSSI.
- 2.4.44 Within the land required for the construction of the Proposed Scheme there is low density of building roost opportunities for bats, primarily comprised of isolated dwellings and farmsteads. The route of the Proposed Scheme is crossed by a small number of roads including: Stoneton Road; the A423 Banbury Road; the B4451 Kinton Road and the A425 Leamington Road. These roads are backed by continuous hedgerows with occasional tree standards and are currently unlit. Light pollution is minimal within this area thus increasing the potential for habitats to support bat activity.
- 2.4.45 The route of the Proposed Scheme will pass to the east of small settlements including: Wormleighton, Ufton and Ladbroke; and to the west of Priors Hardwick, Upper Boddington, Bascote Heath and the small town of Southam. These areas of settlement have good connectivity to habitats contained within the land required for construction of the Proposed Scheme, along linear features and/or continuous habitat such as hedgerows and watercourses which are commonly used by commuting bats to navigate their way through the landscape between roosting and foraging areas.
- 2.4.46 A review has been undertaken of committed developments within 1km of the Proposed Scheme for additional information gathered from survey results; three of the planning applications for these development included relevant bat survey information as follows:
- 12/01500/FUL; Erection of nine wind turbines up to a maximum tip height of 125m, and other ancillary development (Stoneton Wind Farm). This development is within the land required for construction of the Proposed

Scheme. The bat surveys identified one confirmed common pipistrelle and brown long-eared (non-breeding) building roost (030-BS1-119002); three buildings with high potential to support bats, and one bridge (taking a footpath over the Grand Union Canal) with moderate potential to support bats¹⁰. Several trees were identified with high potential to support a bat roost although no confirmed roosts were identified within the land required for construction of the Proposed Scheme. A review of bat activity surveys undertaken in support of the proposed wind farm identified the presence of common pipistrelle, soprano pipistrelle and noctule within land required for the construction of the Proposed Scheme with additional bat passes identified as *Myotis* species and noctule/serotine/Leisler's. Bat activity was predominantly associated with the Grand Union Canal and several of the hedgerows within this area including hedgerows linking the village of Wormleighton to the Grand Union Canal and Newfield Pool;

- 12/02602/FUL: Demolition of Victor Hodges House, Southam Library, No 2 Park Lane and No.7 High Street and the erection of a 75 unit extra care facility with associated facilities. This development is located 500m from the land required for construction of the Proposed Scheme. Bat surveys confirmed common pipistrelle and brown long-eared activity within surrounding habitats. A small number of brown long-eared droppings were found within one roof void whilst all other buildings were found to be of low potential. Mitigation for loss of roost was the inclusion of bat boxes; and
- 13/00809/FUL: Hybrid Planning Application (part full, part outline) for mixed use development comprising (1) Full Planning Application for Demolition of existing football stadium and bowling facilities, together with provision of new replacement pitches and facilities. This development is located 300m from the land required for construction of the Proposed Scheme. No roosts were identified during the surveys. Low levels of common pipistrelle and brown long-eared were confirmed commuting and foraging around the buildings and along the hedgerows on the site.

Roosting (trees)

- 2.4.47 Initial assessments of trees were undertaken during detailed ground level assessments to confirm roosts and/or roosting potential. There are 88 trees, within the land required for the construction of the Proposed Scheme within this area, that were subject to initial assessment during extended Phase 1 habitat surveys and initial ground level tree assessments. No confirmed roosts were identified, five trees were found to contain features with a high potential to support roosting bats and 27 trees were found to contain features with moderate potential to support roosting bats.
- 2.4.48 Where permission was granted tree climbing was undertaken in order to carry out detailed inspections. Thirty-three of the 88 trees within the land required for the construction of the Proposed Scheme were subject to detailed inspection. Six of these trees were downgraded to low or negligible potential as a consequence of the inspection.

¹⁰ EDF Energy Renewables (2012), Stoneton Wind Farm, Technical Appendices 4, *Survey Results*, AECOM Ltd, Newcastle.

- 2.4.49 Between the land required for the construction of the Proposed Scheme and 100m, 150 trees were subject to initial assessment. One tree was found to have a confirmed roost. Fifteen trees were found to contain features with a high potential to support roosting bats and 59 trees were found to contain features with moderate potential to support roosting bats.
- 2.4.50 Sixty-two of the 150 trees within 100m of the land required for the construction of the Proposed Scheme were subject to detailed inspection. Twenty-two of these trees were downgraded to low or negligible potential as a consequence of the inspection.
- 2.4.51 No trees were subject to emergence survey within land required for the construction of the Proposed Scheme. One tree was subject to emergence survey within 100m of land required for the construction of the Proposed Scheme.

Summary

- 2.4.52 There were two confirmed bat roosts identified within the land required for the construction of the Proposed Scheme within this area. Four trees were found to have high potential to support roosting bats and 21 trees were found to have moderate potential to support roosting bats.
- 2.4.53 There was one confirmed roost identified within 100m of land required for the construction of the Proposed Scheme. Twenty one trees were found to have high potential to support roosting bats and 32 trees were found to have moderate potential to support roosting bats.
- 2.4.54 Details of confirmed tree roosts in this area of the route are provided in Table 2.

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Table 2: Confirmed tree roosts within CFA16

Ecology survey code	Location	OS grid reference	Tree species	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description ¹¹	Distance from the land required for construction of the Proposed Scheme ¹² (m)
030-BT1-127103	Long Itchington and Ufton Woods SSSI	SP 38714 63116	Oak	Brown long-eared bat (unknown)	6 September 2013 Radiotracking	T, M, D	Single tagged brown long-eared located within roost. Dense canopy and height of roost limited identification of roost feature	The route of the Proposed Scheme passes beneath the SSSI in tunnel
030-BT1-127108	Long Itchington and Ufton Woods SSSI	SP 38750 63099	Oak	Brown long-eared bat(unknown)	6 September 2013 Radiotracking	T, M, D	Single tagged brown long-eared located within roost. Dense canopy and height of roost limited identification of roost feature	The route of the Proposed Scheme passes beneath the SSSI in tunnel
030-BT1-127123	Thorpe Rough	SP 39968 62411	Ash	Climbed – woodpecker hole, bat droppings at base, DNA results inconclusive	11 June 2013 Climb	D	Woodpecker hole along woodland edge of Thorpe Rough. Hole orientated south-east	180m
030-BT1-127135	Thorpe Rough	SP 39899 62433	Oak	Noctule bat 1 bat present (confirmed by climb and inspect + DNA analysis) <i>Myotis</i> species 3 bats present (confirmed by emergence survey)	11 June 2013 Climb	T, D	Confirmed roost in rot hole 5m high at branch end. 1 noctule present. DNA analysis of droppings confirms noctule. 3x <i>Myotis</i> species recorded emerging from same feature. Also woodpecker hole 4m high on trunk, droppings found, awaiting DNA analysis results.	115m

¹¹ Roost types for which feature is considered suitable coded as follows: T = Transitional roost; M = Maternity roost; S = Satellite roost; H = Hibernation roost, D = Day roost; F = Feeding roost; MAT = Mating roost, N = Night roost. Definitions as provided in Hundt L (2012) *Bat Surveys: Good Practice Guidelines 2nd edition*, Bat Conservation Trust.

¹² Hereafter the term 'land required' is used as a shortened version of the full term 'land required for the construction of the Proposed Scheme'.

Ecology survey code	Location	OS grid reference	Tree species	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type	Roost description ¹¹	Distance from the land required for construction of the Proposed Scheme ¹² (m)
030-BT1-127158	Thorpe Rough	SP 39831 62440	Oak	Natterer's bat – number unknown (confirmed by DNA Analysis)	11 June 2013 Climb	D	Feature caused by lightning strike creating a callus roll, dead wood and hollowing from 3m to 15 high. Staining present no bats present at time of survey. Transient potential throughout feature plus deep internal, too far to endoscope.	50m
030-BT1-127161	Thorpe Rough	SP 39935 62550	Oak	Natterer's bat 10/12 bats, pups present (confirmed by DNA analysis)	11 June 2013 Climb	M	Woodpecker hole located on main trunk of tree 15m from woodland edge. Cavity extends upwards 20/30cm. Feature orientated east	170m
030-BT1-127168	Thorpe Rough	SP 40262 62545	Oak	Natterer's bat	22 August 2013 Radiotracking	Unknown	Unknown	485m
030-BT1-127169	Thorpe Rough	SP 40304 62453	Unknown	Natterer's bat	Radiotracking	Unknown	Unknown	560m
030-BT1-127170	Thorpe Rough	SP 39972 62529	Ash	Daubenton's bat	28 August 2013 Radiotracking	M	16 individuals recorded emerging from roost	200m
030-BT1-127171	Thorpe Rough	SP 39178 62454	Unknown	Natterer's bat	Radiotracking	Unknown	Unknown	10m
030-BT1-127172	Dallas Burston Polo Club	SP 40003 63230	Ash	Noctule	01 September 2013 Radiotracking	T, D, MAT	Single tagged Noctule located within roost	760m
030-BT1-127173	Thorpe Rough	SP 40028 262417	Ash	Noctule	01 September 2013 Radiotracking	T, D	Single bat heard social calling	530m
030-BT1-127174	Thorpe Rough	SP 40094 62510	Oak	Daubenton's bat	06 September 2013 Radiotracking	Unknown	Roost located following tagged female associated with roost 030-BT1-127170	640m

Roosting (building and structures)

- 2.4.55 Desk based initial assessments of roosting potential within buildings and structures were undertaken using historic records, results available from committed developments, aerial photographs and data collected during extended Phase 1 habitat surveys.
- 2.4.56 Initial assessments of six buildings currently identified to be at high risk of demolition found one building to have a confirmed roost within an area where access for field surveys had been refused. No other buildings identified to be at high risk of demolition were found to contain features with a high or moderate potential to support roosting bats.
- 2.4.57 A further three buildings within the land required for the construction of the Proposed Scheme (but not currently identified to be at risk of demolition) were subjected to initial assessments. None were not found to support confirmed roosts, one was found to contain features with high potential and one was found to have features of moderate potential to support roosting bats.
- 2.4.58 Within 100m of land required for the construction of the Proposed Scheme a further 18 buildings and structures were subjected to initial assessments. Two were found to contain features with a high potential and one was found to have features of moderate potential to support roosting bats.
- 2.4.59 Detailed internal inspections were carried out at two buildings identified to have moderate or high potential to support bats based on results of the initial assessment, where access was allowed. No high or moderate potential buildings were downgraded to low potential or scoped out following detailed inspection.
- 2.4.60 No buildings within the land required for the construction of the Proposed Scheme but not identified to be at high risk of demolition were subject to detailed inspection due to access restrictions.
- 2.4.61 Six buildings within 100m of the land required for the construction of the Proposed Scheme were subject to detailed inspection. There was no change to the roost potential statuses as identified in the initial assessment of the buildings following the detailed inspection.
- 2.4.62 Where access allowed emergence surveys were carried out at those buildings that were identified to have high to moderate potential for roosting bats. One building identified to be at high risk of demolition within the land required for construction for the Proposed Scheme was subject to emergence survey. In addition a building within the land required for the construction of the Proposed Scheme was subject to emergence surveys. Within 100m of the land required for the construction of the Proposed Scheme one building was subject to emergence surveys.
- 2.4.63 Hibernation surveys of buildings were undertaken at 030-BS1-127002, Home Farm during the 2012/2013 winter period, no evidence of hibernating bats was found.

Summary

- 2.4.64 Details of confirmed building roosts in this area are provided in Table 3.
- 2.4.65 A confirmed bat roost was found within one building identified to be at high risk of demolition. All other buildings identified to be at high risk of demolition that were accessible for field surveys were found to be of low or negligible potential to support roosting bats.
- 2.4.66 A low density of buildings and one bridge were identified with high or moderate potential to support roosting bats within the land required for the construction of the Proposed Scheme. A bridge over the Oxford Canal and a residential building associated with a farm south-west of A423 Banbury Road, Southam, were found to have moderate potential to provide roosting opportunities for bats. Two barns were identified with potential to support roosting bats during surveys undertaken in 2011 to inform the assessment for the proposed Stoneton Wind Farm near Wormleighton¹³. This included one barn found to have high potential to support bats and one barn found to have moderate potential.
- 2.4.67 Two confirmed roosts were found within 100m of the land required for the construction of the Proposed Scheme. Field surveys identified one building (stables) of moderate potential to support roosting bats within a small complex of buildings associated with Burston Dallas Polo Club, east of Long Itchington and Ufton Woods SSSI. During surveys undertaken in 2011 to inform the assessment for the proposed Stoneton Wind Farm near Wormleighton two barns were identified to have high potential to support roosting bats.

¹³ AECOM (2012), Stoneton Wind Farm: Technical Appendices 4. AECOM, Newcastle upon Tyne. Submitted in support of Planning Application reference 12/01500/FUL.

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Table 3: Confirmed bat roosts in buildings/structures within CFA16

Ecology survey code	Location	OS grid reference	Building/structure type	Species confirmed utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ¹⁴	Roost description	Distance from the land required for construction of the Proposed Scheme ¹⁵ (m)
030-BS1-124016	Residential property along the A423 Banbury Road, Southam	SP 41621 60267	Residential – this building is identified to be at high risk of demolition.	Common pipistrelle (unknown)	07 August 2013 Roost confirmed through inspection survey only – 10/15 droppings below north facing gable end wall	T, D	Below north facing gable end wall in void. DNA analysis confirms Common pipistrelle.	Within land required
030-BS1-125004	Residential property south of Southam, west of the A4451 Kington Road	SP 40724 60812	Residential	Brown long-eared bat (unknown)	12 June 2013 One brown long-eared bat was found during inspection survey and approximately 1000 droppings recorded within the building.	M	Gaps under roof tiles and in felt allowing access into enclosed roof void.	35m
030-BS1-127001	Farm, south east of Long Itchington and Ufton Woods SSSI	SP 39995 62144	Residential	Pipistrelle species (unknown)	05 July 2012 Inspection – small number of droppings found, unsuitable quality for DNA	T, D	Farm, south east of Long Itchington and Ufton Woods SSSI	240m
030-BS1-127002	Farm, south-east of Long Itchington and Ufton Woods SSSI	SP 39811 62079	Residential	Common pipistrelle (1)	10 July 2013 Emergence	T, D	No access to roof void, roost confirmed through emergence only. Gaps under decaying wooden wall plate and roof tiles/felt allow access to roof void.	65m

¹⁴ Roost types are as follows: T = Transitional roost; M = Maternity roost; S = Satellite roost; H = Hibernation roost, D = Day roost; F = Feeding roost; MAT = Mating roost, N = Night roost. Definitions as provided in Hundt L (2012), *Bat Surveys: Good Practice Guidelines 2nd edition*, Bat Conservation Trust.

¹⁵ Hereafter the term 'land required' is used as a shortened version of the full term 'land required for the construction of the Proposed Scheme'.

Bat activity surveys

Transect Surveys

- 2.4.68 Six transect routes have been surveyed within land required for the construction of the Proposed Scheme in this area, as shown in Table 4.
- 2.4.69 The most southern transect comprising land associated with habitats west of Radbourne Lane, adjacent to Ladbroke Fox Covert. Habitats include fields of improved grassland bound by a mix of fences and hedgerows. These habitats have connectivity to buildings associated with Ladbroke Grove Farm and potential foraging habitats including Ladbroke Fox Covert to the north and large water bodies to the south.
- 2.4.70 One transect assessed habitats associated Ladbroke Hill Farm near Windmill Hill Spinney. Habitats include large arable fields with wide field margins comprising semi-improved grassland and a small area of woodland, Windmill Hill Spinney. Potential nearby building roosts include those associated with Ladbroke Hill Farm, village of Ladbroke and town of Southam.
- 2.4.71 One transect was located within habitats surrounding Harp Farm south-east of A423 Banbury Road, Southam. Habitats include large arable and improved grassland fields bound by fences and hedgerows. Potential foraging habitats include a large water body sited within the grounds of the farm and a smaller water body located along a field boundary on the south-west corner of the transect route.
- 2.4.72 Three transect routes were designed to assess bat activity within and adjacent to the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough. Habitats to support roosting, commuting and foraging bats include ancient broadleaved woodland, secondary broadleaved woodland and pasture fields bound by tall mature hedgerows which link the areas of woodland and corridor of the Grand Union Canal.
- 2.4.73 The following bat species have been recorded during the bat activity surveys conducted in support of the assessment in this area: barbastelle, noctule, Leisler's, serotine, Daubenton's, brown long-eared bat, common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, Brandt's, and Natterer's. Some calls recorded were unable to be identified to species level and encounters with *Myotis* sp., *Nyctalus* sp. and *Pipistrellus* sp. have also been recorded.
- 2.4.74 The results of bat activity surveys are provided in Table 5 to Table 10.

Table 4: Bat activity surveys conducted within CFA16

Ecology survey code	Transect location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA1-120001	Habitat surrounding habitats west of Radbourne Lane, adjacent to Ladbroke Fox Covert	4	04 July 2013	14 August 2013	EC-06-082, E6
030-BA1-122001	Habitats around Ladbroke Hill Farm near Windmill Hill Spinney (mainly woodland and arable field boundaries)	13	01 August 2012	02 July 2013	EC-06-083, E6
030-BA1-123002	Habitats around Harp Farm south-east of A423 Banbury Road, Southam	6	20 July 2012	22 October 2012	EC-06-084, G5
030-BA1-126001	Habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal	15	05 July 2012	06 August 2013	EC-06-086, F6
030-BA1-127001	Habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal	9	08 May 2013	03 September 2013	EC-06-087, H7
030-BA1-128001	Habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal	11	23 April 2013	03 September 2013	EC-06-087, F6

Table 5: Bat activity transect survey results – transect 030-BA1-120001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-120001	Land at Ladbroke Grove Farm and Land at Upper Radbourne Farm (habitats west of Radbourne Lane, adjacent to Ladbroke Fox Covert)				Agricultural land with hedgerows connected to Ladbroke Fox Covert.																
Visit number and date	Weather conditions				Total species passes during transect survey ¹⁶																
	Temp (°C)	Cloud (0-8) ¹⁷	Rain (0-5) ¹⁸	Wind (0-12) ¹⁹	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: Dusk 04 July 2013	13.5	1	0	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dawn 05 July 2013	11.3	7	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dusk 13 August 2013	14	5	0	0	21	0	0	0	0	0	0	0	0	0	3	0	0	2	0	0	0
Visit 4: Dawn 14 August 2013	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

¹⁶ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp. – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

¹⁷ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

¹⁸ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

¹⁹ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.

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Table 6: Bat activity transect survey results – transect 030-BA1-122001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-122001	Land around Windmill Hill Spinney and Ladbroke Hill Farm (Habitats around Ladbroke Hill Farm near Windmill Hill Spinney)				Arable land with 5m field boundary strips of semi-improved grassland. Windmill Hill Spinney (secondary woodland).																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: Dusk 01 August 2012	17	6	3	0	6	0	0	2	0	0	0	0	0	0	0	0	0	3	0	0	0
Visit 2: Dawn 02 August 2012	13	7	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dusk 28 August 2012	18	2	0	1	9	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
Visit 4: Dawn 29 August 2012	15	8	0	2	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
Visit 5: Dusk 27 September 2012	13	1	0	3	5	3	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 6: Dawn 23 October 2012	10	8	1	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: Dusk 22 April 2013	11	6	0	6	5	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
Visit 8: Dawn 23 April 2013	8	2	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 9: Dusk 21 May 2013	11	7	0	1	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 10: Dawn 22 May 2013	9	8	0	1	6	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 11: Dusk 04 June 2013	15	1	0	2	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 12: Dawn 05 June 2013	10	8	0	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 13: Dusk 02 July 2013	15	8	0	6	8	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0

Table 7: Bat activity transect survey results – transect 030-BA1-123002

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-123002	Village Farm and Grounds Farm (Habitats south-east of A423 Banbury Road, Southam)				Fields of pastures and hedgerows with pond. Nursery with polytunnels, porta-cabins, hardstanding areas.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: Dusk 20 July 2012	12.5	8	0	1	13	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0
Visit 2: Dusk 02 August 2012	15.5	7	1	3	20	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Visit 5: Dusk 28 August 2012	15	2	0	0	12	0	0	0	0	0	0	0	0	0	1	0	0	5	0	0	0
Visit 6: Dawn 29 August 2012	15	8	0	3	7	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 7: Dawn 25 September 2012	9.5	0	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: Dusk 22 October 2012	10	8	1	1	8	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0

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Table 8: Bat activity transect survey results – transect 030-BA1-126001

Ecology survey code	Transect location				Description of habitats covered by transect																	
030-BA1-126001	Fox Farm and Stoney Thorpe Home Farm (Habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal)				Amenity grassland to east; semi-improved grassland to west; improved grassland in central area. A large ornamental pond adjacent to a tall mature hedgerow. Some buildings towards centre/east. Broadleaved woodland, including Thorpe Rough ancient woodland to north-east with large, mature oaks; further broadleaved woodland, Long Itchington and Ufton Woods SSSI, to the north.																	
Visit number and date	Weather conditions				Total species passes during transect survey																	
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es	
Visit 1: Dusk 05 July 2012	18	3	0	2	4	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	
Visit 2: Dusk 26 July 2012	19.5	2	0	0	5	0	0	3	0	0	0	0	0	0	1	0	0	2	1	0	2	
Visit 4: Dusk 30 August 2012	14	4	0	3	17	1	0	0	0	0	0	0	0	0	4	0	0	2	0	0	0	
Visit 5: Dawn 31 August 2012	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
Visit 6: Dusk 24 September 2012	12.5	6	0	4	3	4	0	0	0	0	0	0	0	0	3	0	0	1	1	0	0	
Visit 7: Dusk 15 October 2012	11	6	1	2	7	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
Visit 8: Dusk 23 April 2013	9.5	1	0	2	4	3	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	
Visit 9: Dawn 24 April 2013	7.5	1	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 10: Dusk 15 May 2013	7.5	4	0	2	4	2	0	0	0	0	0	0	0	0	1	0	0	2	0	1	0	
Visit 11: Dusk 04 June 2013	13	1	0	2	4	4	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	
Visit 12: Dawn 05 June 2013	11.5	7	0	1	8	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	
Visit 13: Dusk 03 July 2013	15.5	2	0	1	7	6	0	0	0	0	0	0	0	0	3	0	0	2	0	0	0	
Visit 14: Dawn 04 July 2013	11	7	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0	3	0	0	0	
Visit 15: Dusk 05 August 2013	16	2	0	3	4	3	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	
Visit 16: Dawn 06 August 2013	10	0	0	2	1	0	0	0	0	0	0	0	0	0	4	0	0	3	0	0	0	

Table 9: Bat activity transect survey results – transect 030-BA1-127001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-127001	Long Itchington and Ufton Woods (Habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal)				Oak/hazel coppiced broadleaved ancient woodland. Rides through wood, with ditches.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: Dusk 08 May 2013	11	2	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dusk 03 June 2013	14	0	0	0	2	4	0	0	0	0	0	0	0	0	8	0	0	1	0	0	0
Visit 3: Dawn 04 June 2013	6.5	0	0	0	4	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 4: Dusk 08 July 2013	17	0	0	1	7	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 5: Dawn 09 July 2013	12	2	0	0	3	3	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0
Visit 6: Dusk 01 August 2013	22	0	0	1	3	2	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
Visit 7: Dawn 02 August 2013	19	0	0	1	5	1	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0
Visit 8: Dusk 02 September 2013	18.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 9: Dawn 03 September 2013	14	0	0	0	4	2	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0

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Table 10: Bat activity transect survey results – transect 030-BA1-128001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-128001	Land adjoining Woodmeadow Farm (Habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal)				Arable land surrounded by hedgerows, adjacent to Long Itchington and Ufton Woods SSSI.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: Dusk 23 April 2013	16/11	3	0	1	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dawn 24 April 2013	6	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dusk 20 May 2013	14	8	0	3	12	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
Visit 4: Dawn 21 May 2013	14.5	8	0	2	6	0	0	0	0	0	0	0	0	0	6	0	0	8	0	0	0
Visit 5: Dusk 03 June 2013	15	0	0	0	8	6	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
Visit 6: Dawn 04 June 2013	8	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: Dusk 09 July 2013	17	0	0	0	8	3	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: Dawn 10 July 2013	12	0	0	0	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Visit 9: Dusk 01 August 2013	22	0	0	1	13	1	0	0	0	0	0	0	0	0	0	1	0	3	1	0	0
Visit 10: Dawn 02 August 2013	17	0	0	2	7	2	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0
Visit 11: Dusk 03 September 2013	19	2	0	1	14	2	0	0	0	0	0	0	0	0	2	0	0	3	0	0	0

Static Detectors

- 2.4.75 A total of 15 static survey locations were positioned within the area (all using SM2+BAT detectors) as shown in Table 11. To date, the dominant species recorded are common and soprano pipistrelle as would be expected due to both species being widely distributed and common within Warwickshire and the UK.
- 2.4.76 A broad range of habitats was encompassed by the static surveys and were prominently associated with each of the transect survey routes. The statics associated with transects were as follows:
- three statics were located within habitats associated with a farm near Windmill Hill Spinney (mainly woodland and arable field boundaries). The surveys assessed activity along field boundaries and the woodland edge of Windmill Hill Spinney;
 - two statics assessed activity within habitats associated with a farm south-west of A423 Banbury Road, Southam including arable field boundaries; and
 - ten statics were located within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough. Habitats include woodland, woodland edge, a water body and field boundaries.
- 2.4.77 Three statics were located within habitats away from transects. Statics were located along potential key commuting features for bats and included:
- field boundary associated with Wormleighton Grange Farm within habitat around Stoneton and Wormleighton;
 - land associated with a residential property south of Southam, west of the B4451 Kineton Road; and
 - One static positioned to assess bat activity along the habitats associated with the Grand Union Canal.
- 2.4.78 The static survey results are shown in Table 12 to Table 18. A suspected barbastelle call was recorded along the woodland edge of a small block of woodland approximately 200m south of Long Itchington and Ufton Woods SSSI (030-BP-127006) during the week beginning the 01 August 2012. Here the static detector was positioned along the edge of a small block of trees that lies between Long Itchington and Ufton Woods SSSI and Thorpe Rough. In response to the possible presence of barbastelle the effort of static surveys was increased and targeted potential commuting and foraging habitats for this species. Confirmed calls of barbastelle were recorded using habitats associated with a large ornamental pond located within the grounds of Burston Dallas Polo Club (static location 030-BP-127003) in August 2012. A total of three passes, including foraging activity, were recorded at 00:01 on the 19 August 2012 and one call was detected at 21:28 on the 20 August 2012. Individual calls for this species were also recorded in 2013.

Table 11: Bat static surveys conducted within CFA16

Ecology survey code	Static Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA2-119001	Habitats associated with Wormleighton Grange Farm, within habitats around Stoneton and Wormleighton	5	18 April 2013	13 August 2013	EC-06-081, L1-D10
030-BA2-120001	Near Radbourne Manor Farm(within habitats around Stoneton and Wormleighton)	2	24 July 2013	14 August 2013	EC-06-082, I1
030-BA2-122001	Labrooke Hill Farm(within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	8	27 July 2012	09 July 2013	EC6-06-083, E5
030-BA2-123002	Hill Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	7	06 August 2012	09 July 2013	EC6-06-083, C5
030-BA2-123003	Harp Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	6	20 July 2012	23 July 2013	EC6-06-083, A7
030-BA2-123004	Harp Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	7	20 July 2012	23 July 2013	EC6-06-084, G6
030-BA2-124001	Village Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	3	08 April 2013	11 June 2013	EC6-06-084, D6
030-BA2-125001	Kineton Road (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	5	18 April 2013	13 August 2013	EC6-06-085, G6
030-BA2-127001	Home Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	1	14 August 2012	20 August 2012	EC-06-086, E2
030-BA2-127002	Home Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	6	14 August 2012	20 August 2013	EC-06-086, E9

Ecology survey code	Static Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA2-127003	Home Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	7	14 August 2012	20 August 2013	EC-06-086, D5
030-BA2-127004	Home Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	8	23 July 2012	13 August 2013	EC-06-086, D4
030-BA2-127005	Fox Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	1	14 August 2012	20 August 2012	EC-06-086, D4
030-BA2-127006	Home Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	7	01 August 2012	13 August 2013	EC-06-086, C6
030-BA2-127007	Habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	3	07 May 2013	06 August 2013	EC-06-086, C6
030-BA2-128001	Woodmeadow Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	4	29 April 2013	09 July 2013	EC-06-087, F6
030-BA2-128002	Woodmeadow Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	5	22 April 2013	06 August 2013	EC-06-087, E6
030-BA2-128003	Long Itchington and Ufton Woods Southam (habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	3	07 May 2013	06 August 2013	EC-06-087, H10
030-BA2-128004	Long Itchington and Ufton Woods Southam (habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	3	07 May 2013	06 August 2013	EC-06-087, H8

Ecology survey code	Static Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA2-129001	Along Grand Union Canal	5	18 April 2013	13 August 2013	EC-06-088, G7

Table 12: Summary of static detector survey results for 030-BA2-119001

Ecology survey code	Location	OS Grid			Description of habitat													
030-BA2-119001	Habitats associated with Wormleighton Grange Farm, within habitats around Stoneton and Wormleighton	SP 42821 55554			Woodland, improved Pasture.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ²⁰ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
18 April 2013 – 24 April 2013	6	1222	33	0	0	0	0	0	0	0	0	1046	0	0	1	1	0	0
15 May 2013 – 23 May 2013	8	241	4	0	0	0	0	0	0	0	0	39	0	0	32	2	0	0
01 June 2013 – 10 June 2013	9	132	1	0	0	0	0	0	0	0	0	14	0	0	22	4	0	0
04 July 2013– 11 July 2013	7	30	1	0	0	0	0	0	0	0	0	10	0	0	31	2	0	0
01 August 2013 – 13 August 2013	12	984	14	0	0	0	0	0	0	0	0	43	0	0	7	24	1	0

²⁰ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 13: Summary of static detector monitoring results for 030-BA2-120001

Ecology survey code	Location	OS Grid				Description of habitat													
030-BA2-120001	Near Radbourne Manor Farm (within habitats around Stoneton and Wormleighton)	SP 44632 57222				Rough grassland and scrub on side of pond.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ²¹ (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep	
24 July 2013 – 31 July 2013	7	539	3	0	0	0	0	0	0	0	0	10	0	0	40	26	2	0	
08 August 2013 – 14 August 2013	6	100	8	0	0	0	0	0	0	0	0	3	0	0	12	4	1	0	

²¹ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 14: Summary of static detector monitoring results for 030-BA2-122001

Ecology survey code	Location	OS Grid		Description of habitat														
030-BA2-122001	Labrooke Hill Farm(within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough	SP 42781 58902		Arable margin close to field, along hedge line.														
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ²² (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
06 August 2012 – 13 August 2012	7	1228	7	0	73	0	0	0	0	0	0	19	0	0	4	9	0	2
25 September 2012 – 29 September 2012	4	89	13	0	0	0	0	0	0	0	0	68	0	0	6	5	1	0
22 October 2012 – 24 October 2012	3	12	1	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0
08 April 2013 – 15 April 2013	7	4	1	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0
28 May 2013 – 04 June 2013	7	616	289	0	0	0	0	0	0	0	0	53	0	0	12	33	1	0
11 June 2013 – 18 June 2013	7	162	5	0	0	0	0	0	0	0	0	30	0	0	0	1	0	0

²² Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 15: Summary of static detector monitoring results for 030-BA2-123002

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-123002	Hill Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	SP 42624 59276	Woodland edge of Windmill Hill Spinney, adjacent to arable field with wide field margins and bound by a network of hedgerows.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ²³ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
06 August 2012 – 13 August 2012	7	239	4	0	0	0	0	0	0	0	0	27	0	0	10	1	0	11
27 September 2012 – 02 October 2012	5	706	8	0	0	0	0	0	0	0	0	34	0	0	0	3	0	0
26 October 2012 – 29 October 2012	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08 April 2013 – 15 April 2013	7	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
07 May 2013 – 14 May 2013	7	624	10	0	0	0	0	0	0	0	0	37	0	0	1	0	0	0
18 June 2013 – 25 June 2013	7	660	47	0	0	0	0	0	0	0	0	118	0	0	12	6	0	0

²³ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 16: Summary of static detector monitoring results for 030-BA2-123003

Ecology survey code	Location	OS Grid				Description of habitat												
030-BA2-123003	Harp Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	SP 42186 59479				Arable field margin along hedge line.												
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ²⁴ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
20 July 2012 – 27 July 2012	7	556	3	0	0	0	0	0	0	0	0	62	3	0	8	1	0	1
25 September 2012 – 29 September 2012	4	155	14	0	0	0	0	0	0	0	0	123	0	0	2	1	0	0

²⁴ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 17: Summary of static detector monitoring results for 030-BA2-123004

Ecology survey code	Location	OS Grid				Description of habitat													
030-BA2-123004	Harp Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	SP 42142 59773				Arable field margin along hedge line.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ²⁵ (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep	
20 July 2012 – 26 July 2012	6	533	25	0	5	0	0	108	0	3	0	167	7	0	1	1	0	0	
24 September – 02 October 2012	8	2550	2	0	0	0	0	0	0	0	0	192	0	0	2	0	0	0	
22 October 2012 – 26 October 2012	4	27	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	
08 April 2013 – 15 April 2013	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
07 May 2013 – 14 May 2013	7	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04 June 2013 – 11 June 2013	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

²⁵ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 18: Summary of static detector monitoring results for 030-BA2-124001

Ecology survey code	Location	OS Grid				Description of habitat													
030-BA2-124001	Village Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	SP 41677 60285				Hedge line facing arable. At junction of two hedges.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ²⁶ (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep	
08 April 2013 – 15 April 2013	7	13	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
07 May 2013 – 14 May 2013	7	40	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	

²⁶ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 19: Summary of static detector monitoring results for 030-BA2-125001

Ecology survey code	Location	OS Grid				Description of habitat													
030-BA2-125001	Kinton Road (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	SP 40799 60893				Domestic garden, hedgerow, arable field.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ²⁷ (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep	
18 April 2013 – 25 April 2013	7	121	65	0	0	0	0	0	0	0	0	9	0	0	1	1	0	0	
15 May 2013 – 22 May 2013	7	108	14	0	0	0	0	0	0	0	0	3	0	0	16	3	0	0	
01 June 2013 – 10 June 2013	9	122	3	0	0	0	0	0	0	0	0	3	0	0	1	1	0	0	
04 July 2013 – 11 July 2013	7	76	1	0	0	0	0	0	0	0	0	1	0	0	10	2	0	0	
01 August 2013 – 13 August 2013	12	159	15	0	0	0	0	0	0	0	0	4	0	0	3	12	0	0	

²⁷ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 20: Summary of static detector monitoring results for 030-BA2-127001

Ecology survey code	Location	OS Grid				Description of habitat												
030-BA2-127001	Home Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	SP 39895 62389				Located on edge of Thorpe Rough broadleaved ancient woodland.												
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ²⁸ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
14 August 2012 – 20 August 2012	6	40	17	0	0	0	0	0	0	0	0	14	0	0	7	2	1	0

²⁸ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 21: Summary of static detector monitoring results for 030-BA2-127002

Ecology survey code	Location	OS Grid	Description of habitat																
030-BA2-127002	Home Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	SP 39217 61962	Clearing in linear copse along A425 Leamington Road, facing margin of pasture field.																
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ²⁹ (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep	
14 August 2012 – 22 August 2012	8	933	77	0	0	0	0	0	0	0	0	24	0	0	12	3	1	13	
29 April 2013 – 07 May 2013	8	508	416	0	0	0	0	0	0	0	0	7	0	0	1	1	0	1	
28 May 2913 – 04 June 2013	7	17	32	0	0	0	0	0	0	0	0	8	0	0	1	1	0	0	
18 June 2013 – 25 June 2013	7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
23 July 2013 – 30 July 2013	7	43	3	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	
13 August 2013 – 20 August 2013	7	104	15	0	0	0	0	0	0	0	0	6	0	0	14	5	0	0	

²⁹ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 22: Summary of static detector monitoring results for 030-BA2-127003

Ecology survey code	Location	OS Grid			Description of habitat													
030-BA2-127003	Home Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	SP 39483 62316			Pond surrounded by pasture fields and tall mature hedgerows with hedgerow trees. Location has strong habitat links to surrounding woodlands and pasture fields.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ³⁰ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
14 August 2012 – 20 August 2012	6	233	236	0	7	0	0	0	0	0	0	289	0	3	123	28	7	0
30 August 2012 – 01 September 2012	2 ³¹	10	6	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
29 April 2013 – 07 May 2013	8	338	160	0	2	0	0	0	0	0	0	434	0	0	4	2	0	0
28 May 2013 – 04 June 2013	7	474	85	0	0	0	0	0	0	0	0	92	0	0	40	2	0	0
18 June 2013 – 25 June 2013	7	991	376	0	0	0	0	0	0	0	0	130	0	0	81	32	0	0
23 July 2013 – 30 July 2013	7	152	144	0	0	0	0	0	0	0	0	192	0	0	155	51	1	0
13 August 2013 – 20 August 2013	7	62	55	0	0	0	0	0	0	0	0	98	3	1	68	43	1	0

³⁰ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

³¹ Rodents had chewed through the static detector cable so that only two nights of data was collected.

Table 23: Summary of static detector monitoring results for 030-BA2-127004

Ecology survey code	Location	OS Grid				Description of habitat												
030-BA2-127004	Home Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	SP 39617 62448				Along scrub lined stream that forms a habitat link between Thorpe Rough and Bascote Heath Wood (no access for field surveys) that lies south of Long Itchington and Ufton Woods SSSI. Surrounding habitats include pasture fields used by horses.												
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ³² (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
23 July 2012 – 25 July 2012	2	196	24	0	0	0	45	60	0	0	0	4	0	0	32	1	1	0
17 September 2012 – 22 September 2012	5	71	214	1	0	0	0	0	0	0	0	48	0	1	3	3	3	0
15 October 2012 – 19 October 2012	4	38	26	0	0	0	0	0	0	0	0	8	0	0	2	0	0	0
29 April 2013 – 07 May 2013	8	77	96	0	0	0	0	0	0	0	0	70	0	0	59	1	0	0
23 July 2013 – 30 July 2013	7	35	7	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0

³² Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 24: Summary of static detector monitoring results for 030-BA2-127005

Ecology survey code	Location	OS Grid				Description of habitat												
030-BA2-127005	Fox Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	SP 39477 62466				Located on southern edge of unnamed broad-leaved woodland, adjacent to improved grassland – additional static location targeted towards assessment of barbastelle activity.												
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ³³ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
14 August 2012 – 20 August 2012	6	389	60	0	10	0	0	0	0	0	0	134	0	0	46	6	1	0

³³ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 25: Summary of static detector monitoring results for 030-BA2-127006

Ecology survey code	Location	OS Grid	Description of habitat																
030-BA2-127006	Home Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	SP 39288 62432	Pasture field near woodland edge of a small area of unnamed woodland (no access for field surveys) that lies south of Long Itchington and Ufton Woods SSSI.																
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ³⁴ (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep	
01 August 2012 – 07 August 2012	6	158	24	0	46	0	0	1	0	0	0	20	0	0	9	3	3	0	
16 October 2012 – 19 October 2012	3	6	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	
29 April 2013 – 07 May 2013	8	423	99	0	0	0	0	0	0	0	0	4	0	0	0	1	0	0	
23 July 2013 – 30 July 2013	7	143	10	0	0	0	0	0	0	0	0	15	0	0	92	74	0	0	

³⁴ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 26: Summary of static detector monitoring results for 030-BA2-127007

Ecology survey code	Location	OS Grid				Description of habitat													
030-BA2-127007	Habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	SP 39149 62456				Located within ancient broad-leaved woodland, along woodland ride and adjacent to southern woodland edge													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ³⁵ (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep	
07 May 2013 – 14 May 2013	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

³⁵ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 27: Summary of static detector monitoring results for 030-BA2-128001

Ecology survey code	Location	OS Grid				Description of habitat												
030-BA2-128001	Woodmeadow Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	SP 38789 63185				North woodland edge margin of Long Itchington and Ufton Woods SSSI, adjacent to arable field bound by hedgerows.												
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ³⁶ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
21 May 2013 – 28 May 2013	7	53	25	0	0	0	0	0	0	0	0	19	0	0	49	11	0	0
25 June 2013 – 02 July 2013	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

³⁶ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 28: Summary of static detector monitoring results for 030-BA2-128002

Ecology survey code	Location	OS Grid			Description of habitat													
030-BA2-128002	Woodmeadow Farm (within habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	SP 38609 63392			Along hedgerow that forms boundaries of arable field north of Long Itchington and Ufton Woods SSSI.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ³⁷ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
21 May 2013 – 28 May 2013	7	72	9	0	0	0	0	0	0	0	0	61	0	0	6	2	0	2
25 June 2013 – 02 July 2013	7	2	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

³⁷ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 29: Summary of static detector monitoring results for 030-BA2-128003

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-128003	Long Itchington and Ufton Woods Southam (habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	SP 38516 62588	Ancient broadleaved woodland along central woodland ride at intersection.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ³⁸ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
07 May 2013 – 14 May 2013	7	12	150	0	0	0	0	0	0	0	0	7	0	0	0	1	0	0

³⁸ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 30: Summary of static detector monitoring results for 030-BA2-128004

Ecology survey code	Location	OS Grid				Description of habitat												
030-BA2-128004	Long Itchington and Ufton Woods Southam (habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough)	SP 38759 62740				Ancient woodland, trees 50-100 years old. Beside woodland ride and drain.												
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ³⁹ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
07 May 2013 – 14 May 2013	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09 July 2013 – 16 July 2013	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 July 2013 – 06 August 2013	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

³⁹ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 31: Summary of static detector survey results – 030-BA2-129001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-129001	Along Grand Union Canal	SP 38044 63945	Broad-leaved woodland, canal, canal bridge.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁴⁰ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
18 April 2013 – 25 April 2013	7	1220	138	1	0	0	0	0	0	0	0	171	0	1 ⁴¹	3	4	0	0
15 May 2013 – 22 May 2013	7	347	18	0	0	0	0	0	0	0	0	196	0	0	131	1	0	0
01 June 2013 – 10 June 2013	9	182	27	0	0	0	0	0	0	0	0	76	0	0	61	1	0	0

⁴⁰ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

⁴¹ Includes possible barbastelle calls. There are a few instances in which species is listed as a possible rather than a definite – this is because the data is not good enough to determine with certainty what species emitted the call. The uncertainty usually arises from the fact that we have only few calls within a sequence or that the signal quality is not very good. For example if the animal is not calling right in the direction of the microphone and we can get distortion effects. The existing table does not allow for the inclusion of these uncertainties.

Discussion

- 2.4.79 Information from WBRC has identified the presence of a minimum of eight species of bat within 10km of the route of the Proposed Scheme within this area, all of which were confirmed during field surveys. Species include: common pipistrelle, soprano pipistrelle, noctule, Daubenton's, Brandt's, Natterer's, and serotine. Leisler's and barbastelle were also confirmed during surveys but no records within 10km of the route of the Proposed Scheme were provided by WBRC. A Nathusius' pipistrelle was also recorded during the surveys although no records for this species were provided by WBRC.
- 2.4.80 The desk study identified a number of known maternity building roost sites for common pipistrelle and brown long-eared bat, together with one Natterer's roost and one Brandt's roost. The known roost sites are typically associated with the village settlements that are located outside of land required for the construction of the Proposed Scheme. The Natterer's maternity roost is located at Priors Marston, south of Southam and a second Natterer's roost with at least four bats was confirmed within Priors Hardwick.
- 2.4.81 Eleven bat records fall within 100m of the land required for the construction of the Proposed Scheme at Bascote Heath, Ufton and Wormleighton, where the route of the Proposed Scheme is in tunnel. The records includes flight records for whiskered/Brandt's, common pipistrelle and soprano pipistrelle located at Long Itchington and Ufton Woods. Only one assumed roost (based on the information supplied) is present within land required for the construction of the Proposed Scheme and is for a brown long-eared bat possible maternity roost (12-15 bats recorded), located at Featherbed Close, Bascote Heath. The number of brown long-eared records confirmed by desk studies and results collected from committed developments supports the assumption that this species is under recorded during static and transect surveys.
- 2.4.82 No historical records of known tree roosts within this area were identified.
- 2.4.83 The transect and static surveys conducted in 2012 and 2013 were distributed to encompass a wide range of habitats representative of those present within the area including arable habitat which is the dominant habitat type. Other habitat types surveyed include ancient broadleaved and broadleaved woodlands, areas of scrub, water bodies, semi-improved and improved grasslands.
- 2.4.84 Overall the static and transect surveys identified common and soprano pipistrelle as the most abundant species within the area as would be expected due to both species being widely distributed and common within Warwickshire and England. *Myotis* species, including Daubenton's and Natterer's were identified as frequently encountered through activity surveys with whiskered and Brandt's bats also identified through trapping surveys. Brown long-eared bats were recorded rarely although the constraints of the acoustic survey methodology, coupled with the call characteristics of the species suggest that they are likely to be under-recorded.
- 2.4.85 The habitats within Ladbroke and Southam area which were assessed for commuting/foraging and/or roosting bat activity have been split into the following areas, south to north, for the purposes of discussion:

- habitat around Stoneton and Wormleighton;
- habitats west of Radbourne Lane, adjacent to Ladbroke Fox Covert;
- habitats surrounding Ladbroke Hill Farm near Windmill Hill Spinney;
- habitats associated with a farm south-east of A423 Banbury Road, Southam;
- habitats south of Southam, west of the B4451 Kineton Road;
- habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough; and
- the Grand Union Canal and associated habitats.

- 2.4.86 Surveys undertaken in 2011 to inform the assessment for the proposed Stoneton Wind Farm near Wormleighton⁴² identified common pipistrelle, soprano pipistrelle and noctule using habitats within land required for the construction of the Proposed Scheme with additional bat passes broadly identified as *Myotis* sp. and noctule, serotine and Leisler's. Bat commuting and foraging activity was found to be particularly associated along the Oxford Canal and several of the hedgerows that form habitat links between the village of Wormleighton, the Oxford Canal and Newfield Pool. Several trees with high bat roost potential were identified within land required for the construction of the Proposed Scheme in addition to one confirmed building roost found to support a summer (non-breeding) roost for common pipistrelle.
- 2.4.87 Static surveys in 2013 within habitats associated with Wormleighton Grange Farm identified moderate levels of activity by an assemblage of bat species including noctule, *Myotis* sp. and low levels of Leisler's bat. Due to the proximity of the habitats and strong habitat links between them, the species recorded within habitats associated with Wormleighton Grange Farm are assumed to belong to the same assemblage as that within land required for the construction of the Proposed Scheme at Stoneton and Wormleighton.
- 2.4.88 Transect surveys conducted in 2013 within habitats west of Radbourne Lane, adjacent to Ladbroke Fox Covert found low levels of activity by commoner bat species with occasional passes by *Myotis* species and individual calls by noctule within land required for the construction of the Proposed Scheme. Activity was typically associated with field boundaries comprised of hedgerows. Commuting activity by common pipistrelle was also recorded across open habitats across fields.
- 2.4.89 Transect and static surveys within habitats surrounding Windmill Hill Spinney identified moderate levels of activity by commoner bat species including common pipistrelle and soprano pipistrelle. Occasional passes for noctule and *Myotis* sp. were confirmed. There was also low level of activity confirmed for Leisler's recorded during static surveys. One pass by serotine was recorded during static surveys in May 2013. Activity was found to be associated with woodland edge of Windmill Hill and along the network of tall mature hedgerows and arable field margins. No trees roosts were

⁴² AECOM (2012), Stoneton Wind Farm: Technical Appendices 4. AECOM, Newcastle upon Tyne. Submitted in support of Planning Application reference 12/01500/FUL.

confirmed but a moderate density of trees were recorded with high and medium bat roost potential within Windmill Hill Spinney.

- 2.4.90 Noctule and Leisler's bats (confirmed within these habitats) are almost exclusively tree-dwelling species and exhibit a higher level of fidelity to particular roosting sites than many other tree-dwelling species. Brown long-eared bats and some *Myotis* species frequently utilise tree roosts and exhibit frequent roost switching⁴³. These species are therefore likely to utilise a higher number of different roost features throughout the year. Common and soprano pipistrelle also utilise tree roosts less exclusively but there is little information on their level of fidelity to individual trees. These bats are likely to make use of a number of suitable tree roost sites throughout the year including maternity, transitional, non-breeding and transient roosts.
- 2.4.91 Transect and static surveys within habitats associated with a farm south-west of A423 Banbury Road, Southam was predominantly low levels of activity by commoner bat species along field boundaries comprised of hedgerows and hedgerow tress. Occasional commuting and foraging activity by noctule was recorded within habitats north-east of the buildings, over arable fields and. Occasional *Myotis* calls were also recorded. No confirmed tree or building roosts were identified. Trees were predominantly found to be of low or negligible potential to support roosting bats. The residential building associated with the surrounding habitats was found to have moderate potential to support bats but no roost was confirmed. On the west side of Banbury Road opposite these habitats is a residential building within land required for the construction of the Proposed Scheme found to support a likely summer (non breeding) roost for common pipistrelle. The roost was confirmed through an inspection survey only. The number of droppings found and the type of suitable roost features identified are suggestive of a summer (transient) roost rather than a maternity roost for this species.
- 2.4.92 Within habitats south of Southam, west of the B4451 Kineton Road one building was found to support a brown long-eared maternity roost within 100m of land required for the construction of the Proposed Scheme. One brown long-eared bat was found during inspection survey and approximately 1000 droppings recorded within the building. Static surveys identified low levels of activity by commoner bat species and *Myotis* species and noctule. The area lies close to the tributary of the River Trent and has good habitat connectivity to the river and associated habitats.
- 2.4.93 The habitats around the Dallas Burston Polo Club and north toward the Grand Union Canal, including Woodmeadow Farm, Long Itchington and Ufton Woods SSSI and Thorpe Rough were found to support the highest diversity of species within this area. A minimum of twelve bat species have been confirmed using habitats at this location including barbastelle, whiskered, Brandt's, serotine, Leisler's, Daubenton's, noctule and Natterer's.
- 2.4.94 Activity surveys undertaken within this area represent new records of barbastelle within north Warwickshire. Low levels of barbastelle activity was recorded in 2012 and 2013 within habitats located within the grounds of the Burston Dallas Polo Club which comprised pasture fields, tall mature hedgerows and a large water body. These

⁴³ Andrews, H.L (2012) Bat Tree Habitat Key: Chapter B1 – Tree-roosting bats – A woodland bat species literature review.

habitats have strong habitat links with Long Itchington and Ufton Woods SSSI and Thorpe Rough. Nathusius' pipistrelle was recorded on a small number of occasions during static surveys undertaken within the grounds of Dallas Burston Polo Club, indicating either a small population or transient use of these habitats. This status of this species within Warwickshire is unknown although the expansion of the species range, thought to be linked to climate change⁴⁴, will make this record consistent with country-wide trends.

- 2.4.95 The full suite of bat surveys undertaken within these habitats, including radio tracking, confirmed maternity tree roosts for Natterer's bat and Daubenton's bat within Thorpe Rough. Tree roosts for individual noctule bats were found within and surrounding Thorpe Rough. Radio tracking found one tree south of Bascote, which supports an individual male noctule. Two brown long-eared tree roosts were confirmed during radio tracking surveys within land required for the construction of the Proposed Scheme within Long Itchington and Ufton Woods SSSI.
- 2.4.96 One building associated with a complex of farm buildings south-east of Long Itchington and Ufton Woods SSSI, 100m of land required for the construction of the Proposed Scheme, was found to support a common pipistrelle summer non breeding roost (with a peak emergence of one). The majority of buildings associated with Dallas Burston Polo Club that were surveyed within land required for the construction of the Proposed Scheme were found to have low or negligible potential to support bats.
- 2.4.97 A low density of trees was identified with high and moderate potential to support roosting bats within Long Itchington and Ufton Woods SSSI and along adjacent hedgerows. Noctule and Leisler's bats, which have been recorded using habitats within this area, are almost exclusively tree-dwelling species and exhibit a higher level of fidelity to particular roosting sites than many other tree-dwelling species. Barbastelle, Daubenton's, Natterer's and brown long-eared bats frequently utilise tree roosts and exhibit frequent roost switching⁴⁵. This behaviour has been observed in a female Natterer's bat which was found to alternate between three tree roosts during the radio-tracking surveys carried out within this area in August 2013. These species are likely to utilise a higher number of different roost features throughout the year. Common, soprano and Nathusius' pipistrelle utilise tree roosts less exclusively but there is little information on their level of fidelity to individual trees. These bats are likely to make use of a number of suitable tree roost sites throughout the year including maternity, transitional, non-breeding and transient roosts. It should be assumed that features with high potential for roosting bats may be used at different times throughout the year by a range of the bat species confirmed to be present.
- 2.4.98 Results of the desk study had identified the potential for the Grand Union Canal to form a key commuting route across the landscape within this area. The canal provides a habitat link between two separate areas of woodland including Long Itchington and Ufton Woods SSSI to the south and Print Wood LWS to the north-east.

⁴⁴ Lundy, M., Montgomery, I. & Russ, J. (2010), Climate change-linked range expansion of Nathusius' pipistrelle bat, *Pipistrellus nathusii* (Keyserling & Blasius, 1839) *Journal of Biogeography* 37: 2232-2242.

⁴⁵ Andrews H et al. (2013), Bat Tree Habitat Key. AEcol Ltd, Bridgwater.

- 2.4.99 The habitats associated with the Grand Union Canal which are crossed by the route of the Proposed Scheme support moderate levels of activity by a diverse assemblage of bat species including noctule, *Myotis* species, Leisler's and Nathusius' pipistrelle.
- 2.4.100 The dominant species recorded was common pipistrelle followed by *Myotis* species and soprano pipistrelle. A low level of Leisler's activity has been recorded during static surveys (peak total count of six calls recorded in April 2013, a species considered to be a rarer bat species within England and rare within Warwickshire. No roosts for this species have been identified. Two calls by Nathusius' pipistrelle (April 2013 only) has been confirmed during static surveys indicative of passage or transient use rather than core foraging or commuting habitat. Nathusius' pipistrelle is a rarer bat species within England; its status within Warwickshire is unknown. Activity by Nathusius' pipistrelle and Leisler's is indicative of passage or transient use rather than the Grand Union Canal providing a core foraging or commuting habitat for these species

CFA17 Offchurch and Cubbington

Overview of bat species status in this area

- 2.4.101 There are no statutory or non-statutory designated sites within 10km of the Proposed Scheme in the Offchurch and Cubbington area which mention bats within their citations.
- 2.4.102 The landscape within this area is dominated by large arable fields with field boundary hedgerows and trees. The bat interest within the area is increased by a number of features with potential to support roosting, commuting and foraging bats. Habitat features with the potential to support higher densities of bat activity include: the River Leam; the Grand Union Canal; the unnamed tributary of the River Leam associated with Ash Beds woodland; and, the unnamed tributary of the River Leam just south of the Grand Union Canal. These watercourses can provide commuting routes that enable the bats to navigate through the landscape. The route of the Proposed Scheme passes through South Cubbington Wood and close to North Cubbington Wood which have potential to support roosting, foraging and commuting activity. These woods form part of the Princethorpe Woods complex which is the largest concentration of semi-natural ancient woodland in Warwickshire.
- 2.4.103 The Proposed Scheme will pass north east of the villages of Offchurch and Cubbington and there are isolated dwellings and farmsteads within the Proposed Scheme, resulting in a low density of building roost opportunities within the study area. Roads within the study area are minor with Offchurch Lane, the B4455 Fosse Way, Welsh Road and Coventry Road crossing the route of the Proposed Scheme. All these roads are bounded by hedgerows and are currently unlit thus reducing light pollution and increasing the potential for habitats to support bat activity
- 2.4.104 Information from WBRC has identified the presence of a minimum of nine species of bat within 10km of the route of the Proposed Scheme within this area, six of which were confirmed during field surveys: common pipistrelle, soprano pipistrelle, brown long-eared bat, Leisler's, noctule and Daubenton's bat. Nathusius' pipistrelle was also recorded during the surveys, although no records for this species within 10km of the route of the Proposed Scheme within this area were provided by WBRC.
- 2.4.105 A review has been undertaken of committed developments within 1km of the land required for construction of the Proposed Scheme for additional information gathered from survey results; three of the planning applications for these development included relevant bat survey information as follows:
- 11/01027/COU: Change of use of existing stables to form accommodation for work riders. This development is located 10m from the Proposed Scheme. Surveys found evidence of common pipistrelle, soprano pipistrelle, brown long-eared bat and Brandt's/whiskered foraging around the site. No evidence of roosts were found within the stables;
 - 12/00383/COU: Change of use of store to Class B1 – Business Use (Building 2). This development is located 100m from the land required for construction of the Proposed Scheme. Survey found no evidence of roosts within the building; and

- 12/00408/COU: Change of use of open fronted machinery store to Class B8 – Storage and Distribution Use (Building 1). This development is located within the land required for construction of the Proposed Scheme. Surveys found no evidence of roosts within the building.

Roosting (trees)

- 2.4.106 Initial assessments of trees were undertaken during detailed ground level assessments to confirm roosts and/or roosting potential. There are 183 trees within the land required for the construction of the Proposed Scheme within this area that were subject to an initial assessment. No confirmed roosts were identified, 30 trees were found to contain features with a high potential to support roosting bats and 30 trees found to contain features with a moderate potential to support roosting bats.
- 2.4.107 Where permission was granted tree climbing was undertaken in order to carry out detailed inspections. Two of the 183 trees within the land required for the construction of the Proposed Scheme were subject to detailed inspection. One of these trees was downgraded to low or negligible potential as a consequence of the inspection.
- 2.4.108 Within 100m of land required for the construction of the Proposed Scheme 231 trees have been subject to initial assessment. No confirmed roosts were identified, 27 trees were found to contain features with a high potential to support roosting bats and 65 trees were found to contain features with a moderate potential to support roosting bats.
- 2.4.109 Five of the 231 trees within 100m of land required for the construction of the Proposed Scheme were subject to detailed inspection. Three of these trees were downgraded to low or negligible potential as a consequence of the inspection.
- 2.4.110 No trees were subject to emergence survey within land required for the construction of the Proposed Scheme. One tree was subject to emergence survey within 100m of land required for the construction of the Proposed Scheme.

Summary

- 2.4.111 There were no confirmed roosts identified within the land required for the construction of the Proposed Scheme within this area. Twenty nine trees were found to have high potential to support roosting bats and 30 trees were found to have moderate potential to support roosting bats.
- 2.4.112 There were no confirmed roosts identified within 100m of land required for the construction of the Proposed Scheme. Twenty four trees were found to have high potential to support roosting bats and 65 trees were found to have moderate potential to support roosting bats.

Roosting (building and structures)

- 2.4.113 Desk based initial assessments of roosting potential within buildings and/or structures were undertaken using desk study records, aerial photographs and data from extended Phase 1 habitat surveys.
- 2.4.114 There is a low density of buildings within the land required for the construction of the Proposed Scheme and no buildings and/or structures are identified to be at high risk of demolition within this area. Nineteen buildings within 100m of land required for the

construction of the Proposed Scheme were subject to an initial assessment. Three buildings were found to have high potential to support roosts. The remaining buildings were found to have low or negligible potential to support roosting bats

- 2.4.115 Detailed internal inspections were carried out at the buildings and/or structures where access was available. Fifteen buildings within 100m of land required for the construction of the Proposed Scheme were subject to detailed inspection. No high potential buildings were downgraded to low potential or scoped out following detailed inspection
- 2.4.116 Where access was available emergence surveys were carried out at those buildings that were identified to have high potential. One building was subject to an emergence survey within 100m of land required for the construction of the Proposed Scheme

Summary

- 2.4.117 There is a low density of buildings within this area. No buildings and/or structures within the land required for the construction of the Proposed Scheme have been identified to be at high risk of demolition, within the land required for construction or within 100m of land required for construction has confirmed roosts. All other buildings surveyed within this area were found to have low or negligible potential to support a roost.
- 2.4.118 Details of confirmed roosts in buildings/structures in this area of the route are provided in Table 32.

Table 32: Confirmed bat roosts in buildings/structures within CFA17

Ecology survey code	Location	OS grid reference	Building/structure type	Species confirmed utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ⁴⁶	Roost description	Distance from the land required for construction of the Proposed Scheme ⁴⁷ (m)
030-BS1-129005	Residential building along Grand Union Canal	SP 38595 63967	Residential	Droppings: Natterer's and common pipistrelle (unknown – species confirmed by DNA analysis) Emergence: common pipistrelle (3) and soprano pipistrelle (1)	08 April 2013 Internal Inspection 13 August 2013 Emergence	T, D (possible maternity)	Roof void – Gaps between roof membranes, gaps between roof timbers	5m
030-BS1-133001	Buildings associated Fields Farm	SP 36334 66975	Barn	Brown long-eared bat (unknown)	22 May 2013 Internal Inspection (5 droppings)	D, T	Gaps between tiles	5m
030-BS1-133004	Buildings associated with Fields Farm	SP 38595 63967	Barn	Whiskered bat droppings (100+ droppings) (species confirmed by DNA analysis) <i>Myotis</i> and brown long-eared bat (unknown)	22 May 2013 Internal Inspection 2009 – review of desk records confirmed roost of brown long-eared bat and <i>Myotis</i>	D, T	Gaps under roof tiles/felt, gaps between roof timbers, barn interior (open front – north)	3m

⁴⁶ Roost types for which feature is considered suitable coded as follows. T = Transitional roost; M = Maternity roost; S = Satellite roost; H = Hibernation roost, D = Day roost; F = Feeding roost; MAT = Mating roost, N = Night roost. Definitions as provided in Hundt L (2012) *Bat Surveys: Good Practice Guidelines 2nd edition*, Bat Conservation Trust.

⁴⁷ Hereafter the term 'land required' is used as a shortened version of the full term 'land required for the construction of the Proposed Scheme'.

*Bat activity surveys***Transect Surveys**

- 2.4.119 A total of two transect survey routes have been surveyed within land required for the construction of the Proposed Scheme as shown in Table 33.
- 2.4.120 The southern transect assessed bat activity within land associated with Fields Farm, north of Offchurch. Habitats include the woodland at Ash Beds and the corridor of the River Leam. Field boundaries and the River Leam provide habitat links to habitats outside of the land required for construction of the Proposed Scheme.
- 2.4.121 The northern transect route assessed bat activity within land associated with field boundaries between North Cubbington Wood and A429 Coventry Road. The habitats support strong links to South Cubbington Wood and to the Princethorpe woods complex.
- 2.4.122 The following bat species have been confirmed during the bat activity surveys conducted in support of the assessment in this area: common pipistrelle; soprano pipistrelle, Nathusius' pipistrelle; Leisler's; Noctule; Daubenton's; and brown long-eared bat. Some calls recorded were unable to be identified to species level and encounters with *Myotis* species and *Pipistrellus* species have also been recorded.
- 2.4.123 The results of transect surveys are provided in Table 34 and Table 35.

Table 33: Bat activity surveys conducted within CFA17

Ecology survey code	Transect Location	Number of surveys conducted	First survey date	Final survey date	CFA	Map reference
030-BA1-132001	Land associated with Fields Farm	9	29 April 2013	07 August 2013	17	EC-06-090,D5
030-BA1-135001	Land associated with field boundaries within land between North Cubbington Wood and Coventry Road	4	11 July 2013	06 August 2013	17	EC-06-092,D5

Table 34: Bat activity transect survey results – 030-BA1-132001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-132001	Land associated with Fields Farm				Arable land surrounded by hedgerows with river to north; farm buildings at south.																
Visit number and date	Weather conditions				Total species passes during transect survey ⁴⁸																
	Temp (°C)	Cloud (0-8) ⁴⁹	Rain (0-5) ⁵⁰	Wind (0-12) ⁵¹	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: Dusk 29 April 2013	13.5	6/8	0/3	5	4	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dusk 22 May 2013	8.9	0	0	4	4	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
Visit 3: Dawn 23 May 2013	5.7	3	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dusk 04 June 2013	15.7	2	0	4	3	2	0	0	0	0	0	0	0	0	0	2	0	3	0	0	0
Visit 5: Dawn 05 June 2013	11.5	7	0	4	7	2	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0
Visit 6: Dusk 02 July 2013	15.7	8	0	4	5	2	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
Visit 7: Dawn 23 July 2013	20.2	6	0-4	1	9	6	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 8: Dusk 06 August 2013	17.1	2	0	0	9	1	0	0	0	0	0	0	0	0	6	1	0	2	0	0	0
Visit 9: Dawn 07 August 2013	13.7	8	0	1	10	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0

⁴⁸ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp. – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

⁴⁹ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

⁵⁰ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

⁵¹ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.

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Table 35: Bat activity transect survey results – 030-BA1-135001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-135001	Land associated with field boundaries within land between North Cubbington Wood and Coventry Road				Arable land adjacent to woodland.																
Visit number and date	Weather conditions				Total species passes during transect survey ⁵²																
	Temp (°C)	Cloud (0-8) ⁵³	Rain (0-5) ⁵⁴	Wind (0-12) ⁵⁵	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: Dusk 11 July 2013	21.3	0	0	0	11	3	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0
Visit 2: Dawn 12 July 2013	14.3	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dusk 05 August 2013	22.8	4	0	2-3	10	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dawn 06 August 2013	13.5	1	0	0/1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

⁵² Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

⁵³ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

⁵⁴ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

⁵⁵ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.

Static Detector

- 2.4.124 A total of seven survey locations were included within static surveys undertaken in 2012 and 2013. To date the dominant species recorded are common and soprano pipistrelle as would be expected due to both species being widely distributed and common within Warwickshire and the UK.
- 2.4.125 Habitats surveyed during the assessment of the Proposed Scheme were located to assess bat activity associated with potential commuting and foraging habitats. The static survey locations included:
- three static locations positioned to assess habitats associated with Field Farm including broadleaved woodland at Ash Beds, and field boundaries and the River Leam;
 - one static positioned to assess habitats associated with an accessible area associated with South Cubbington Wood, land adjacent to the south side of the B4453 Rugby Road; and
 - two static locations positioned to assess bat activity associated with field boundaries within land between North Cubbington Wood and Coventry Road.
- 2.4.126 A summary of static surveys undertaken is provided in Table 36 below.

Table 36: Bat static surveys conducted within CFA17

Ecology survey code	Static Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA2-132001	Land associated with Field Farm including broadleaved woodland (Ash Beds), field boundaries and the River Leam	5	25 April 2013	14 August 2013	EC-06-090, G7
030-BA2-133001	Land associated with Field Farm including broadleaved woodland (Ash Beds), field boundaries and the River Leam	5	25 April 2013	14 August 2013	EC-06-090, D8
030-BA2-133002	Land associated with Field Farm including broadleaved woodland (Ash Beds), field boundaries and the River Leam	5	25 April 2013	14 August 2013	EC-06-090, B6
030-BA2-135001	South Cubbington Wood	5	28 June 2012	22 October 2012	EC-06-091, A3
030-BA2-135002	Land associated with field boundaries within land between North Cubbington Wood and Coventry Road	5	27 September 2012	08 August 2013	EC-06-091, B3
030-BA2-135003	Land associated with field boundaries within land between North Cubbington Wood and Coventry Road	5	26 April 2013	08 August 2013	EC-06-091, B4

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Table 37: Summary of static detector survey results – 030-BA2-132001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-132001	Land associated with Field Farm including broadleaved woodland (Ash Beds), field boundaries and the River Leam	SP 36471 66528	Located on edge of arable field.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁵⁶ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
25 April 2013 – 03 May 2013	8	159	9	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0

⁵⁶ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 38: Summary of static detector survey results – 030-BA2-133001

Ecology survey code	Location	OS Grid				Description of habitat												
030-BA2-133001	Land associated with Field Farm including broadleaved woodland (Ash Beds), field boundaries and the River Leam)	SP 35974 66991				Located on edge of arable field.												
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁵⁷ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
25 April 2013 – 02 May 2013	8	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
21 May 2013 – 29 May 2013	9	9	7	0	0	0	0	0	0	0	0	2	0	0	5	0	0	0
31 May 2013 – 07 June 2013	8	35	4	0	0	0	0	0	0	0	0	7	0	0	3	1	0	0

⁵⁷ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 39: Summary of static detector survey results – 030-BA2-133002

Ecology survey code	Location	OS Grid		Description of habitat														
030-BA2-133002	Land associated with Field Farm including broadleaved woodland (Ash Beds), field boundaries and the River Leam	SP 36471 66528		Located on edge of arable field.														
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁵⁸ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
25 April 2013 – 02 May 2013	7	120	59	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0
21 May 2013 – 29 May 2013	9	193	179	0	00	0	0	0	0	0	0	7	0	0	2	0	0	0
31 May 2013 – 07 June 2013	8	187	120	0	0	0	0	0	0	0	0	5	0	0	4	2	0	0

⁵⁸ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 40: Summary of static detector survey results – 030-BA2-135001

Ecology survey code	Location	OS Grid			Description of habitat													
030-BA2-135001	South Cubbington Wood (land adjacent to the south side of B4453 Rugby Road)	SP 35093 68937			Located on the edge of a broad-leaved woodland by improved grassland.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁵⁹ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
28 June 2012 – 05 July 2012	7	10	1	0	5	0	0	0	0	0	0	4	0	0	0	0	0	0
23 July 2012 – 30 July 2012	7	1	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0
23 August 2012 – 29 August 2012	6	121	37	0	0	0	0	0	0	0	0	7	0	0	3	1	0	3
19 September 2012 – 22 September 2012	3	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 October 2012 – 22 October 2012	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

⁵⁹ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 41: Summary of static detector survey results – 030-BA2-135002

Ecology survey code	Location	OS Grid				Description of habitat													
030-BA2-135002	Land associated with field boundaries within land between North Cubbington Wood and Coventry Road	SP 35053 68876				Mature deciduous woodland, surrounded by farmland. <i>Q. robur</i> is dominant species. Anabat in <i>Q. robur</i> . No trees with any branches suitable for deployment of anabat at proposed location.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁶⁰ (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep	
26 April 2013 – 03 May 2013	7	198	28	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0	
01 August 2013 – 08 August 2013	7	628	438	0	0	0	0	0	0	0	0	336	1	0	0	2	0	0	

⁶⁰ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 42: Summary of static detector survey results – 030-BA2-135003

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-135003	Land associated with field boundaries within land between North Cubbington Wood and Coventry Road	SP 35058 68818	Mature deciduous woodland, surrounded by arable land, road 100m to east. Anabat in a mature oak tree in bird box.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁶¹ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
26 April 2013 – 03 May 2013	7	59	1	0	0	0	0	0	0	0	0	1	0	0	8	0	0	0

⁶¹ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Discussion

- 2.4.127 Access to land within the Offchurch and Cubbington area was highly limited; the dominant habitats within areas where access for field surveys was not permitted comprised arable fields with tree lined hedgerows, scattered trees, ponds and ditches.
- 2.4.128 In 2013 transect surveys undertaken were able to collect some information on the assemblage of bat species associated with key features within the landscape including the Grand Union Canal, woodland at Ash Beds, South Cubbington Wood, North Cubbington Wood and the River Leam.
- 2.4.129 The WBRC provided no desk study records of roosts located within 100m of the land required for the construction of the Proposed Scheme. There are records of bat roosts beyond 100m of the land required for construction of the Proposed Scheme, including maternity roosts and one hibernation roost, typically associated with adjacent settlements including one brown long-eared bat hibernation roost located within a dwelling in Leamington Spa. There is also a record of a brown long-eared bat maternity roost identified in 1998 within a cottage along the Grand Union Canal and at Leam Barn Farm, adjacent to the River Leam.
- 2.4.130 There are very few records of commuting and foraging bats within this area. Results from the 2007 Roadside Mammals Survey identified the presence of Leisler's bats in flight along Western Lane that lies between Waverley Wood and Wappenbury Wood. There is one record for Brandt's, dated 1995 from Leamington Spa. No additional information for this record was supplied.
- 2.4.131 Overall the habitats within this area, predominantly arable and pasture fields with occasional hedgerows and trees, were found to support commuting and foraging activity dominated by common and soprano pipistrelle as would be expected due to both species being widely distributed and common within Warwickshire and the UK.
- 2.4.132 Brown long-eared bats were infrequently recorded although the constraints of the acoustic survey methodology, coupled with the call characteristics of the species suggest that they are likely to be under-recorded.
- 2.4.133 The assemblage of species recorded is consistent with the desk study data. A total of four species are recorded as present within 10km of the route of the Proposed Scheme within this area. Two additional species; Daubenton's and noctule, have been identified during the field surveys conducted in 2012/2013.
- 2.4.134 The habitats within the Offchurch and Cubbington area which were assessed for roosting, commuting and foraging bat activity have been split into the following four areas, south to north, for the purposes of discussion:
- land associated with Field Farm including the woodland at Ash Beds and the River Leam, north of Offchurch;
 - land associated with South Cubbington Wood; and
 - land associated with field boundaries within land between North Cubbington Wood and Coventry Road.

- 2.4.135 Two bridge structures are associated with the canal, including one footbridge (Longhole Bridge) and a bridge carrying Welsh Road over the canal, both of which were found to have low to negligible potential to support roosting bats. No buildings are located within the land required for construction of the Proposed Scheme associated with the Grand Union Canal. A Natterer's bat roost was found at a residential property near Welsh Road, by the Grand Union Canal approximately 5m outside of the land required for the construction of the Proposed Scheme. The presence of Natterer's was confirmed through DNA analysis of droppings only (no bats confirmed to emerge/re-enter). There was a scattering of over one hundred droppings of mixed age within the loft of the building; only a small number of fresh droppings was found. The building possibly supports a small maternity roost or small summer (non-breeding) roost and has potential to support individuals of hibernating bats. Natterer's bat is a rarer bat species in the UK. The same building was also found to support a small summer (non-breeding) roost for common pipistrelle and soprano pipistrelle. It is likely that Natterer's, common pipistrelle and soprano pipistrelle bats present within the building roost will use habitats along the Grand Union Canal as a commuting route and foraging area.
- 2.4.136 Within land associated with Field Farm surveys identified moderate activity by a diverse assemblage of species including common pipistrelle, soprano pipistrelle, brown long-eared bat, Daubenton's and *Myotis* species. Bat activity was found to be associated with the edge of the woodland at Ash Beds and field boundaries. Commuting and foraging activity was found to be most concentrated around the River Leam and associated habitats. Foraging activity by *Myotis* species and noctule was predominantly recorded along the banks of the river. Surveys undertaken to support proposed development at Manor Farm, 10m south of the land required for construction of the Proposed Scheme, confirmed activity by whiskered bat (no roosts). The buildings at Manor Farm lie adjacent to the River Leam suggesting that the river corridor is an important commuting/foraging feature for this species.
- 2.4.137 Whiskered bat was identified using a roost in a barn associated with Fields Farm near Hunningham Road, north of Offchurch. The building is considered likely to support a summer (non-breeding) roost for individual bats. The proximity of the whiskered bat roost to the River Leam makes it likely that the species may use the river and connecting hedgerows for commuting and foraging. The roost was confirmed through DNA analysis only; no bats were confirmed to emerge or re-enter during surveys. The building survey identified a scattering of over one hundred droppings of mixed age within the loft with only small number of fresh droppings found.
- 2.4.138 Surveys confirmed a summer roost of brown long-eared bats, probably used by males and/or non-breeding females within another barn associated with Fields Farm. The presence of the roost was confirmed through DNA analysis of droppings only. No bats were confirmed to emerge or re-enter. The presence of the roost confirmed the presence of brown long-eared bat within these habitats despite no records during transect or static surveys
- 2.4.139 All other buildings associated with Fields Farm were assessed to have low and negligible potential to support roosting bats

- 2.4.140 Field surveys did not confirm the presence of a tree roost or trees with high roost potential. Trees with moderate potential to support roosting bats were identified within the woodland at Ash Beds, and along field boundaries. The field surveys within the area have confirmed the presence of a six species of bat which utilise tree roosts for transient and/or maternity use; therefore there remains the potential for these trees to be used by roosting bats.
- 2.4.141 Noctule (confirmed within the area) is almost exclusively a tree-dwelling species and exhibits a higher level of fidelity to particular roosting sites than many other tree-dwelling species. Brown long-eared bats frequently utilise tree roosts and exhibit frequent roost switching. These species are therefore likely to utilise a higher number of different roost features throughout the year. Common and soprano pipistrelle utilise tree roosts less exclusively but there is little information on their level of fidelity to individual trees. These bats are likely to make use of a number of suitable tree roost sites throughout the year including maternity, transitional, non-breeding and transient roosts.
- 2.4.142 A review of desk study records identified one maternity colony of brown long-eared bats in a building adjacent to the River Leam, approximately 2,000m outside of land required for the construction of the Proposed Scheme, north-west of the village of Hunningham. It is likely that brown long-eared bats from the roost will use habitats along the River Leam as a commuting route and foraging area. No access was available to survey bat activity associated with a farm complex near to the River Leam, north of Offchurch, which lies within 100m of land required for the construction of the Proposed Scheme. However, a review of committed developments found confirmed activity by Brandt's/whiskered bats associated with these habitats.
- 2.4.143 Static surveys within South Cubbington Wood (land adjacent to the south side of B4453 Rugby Road), adjacent to habitats crossed by the route of the Proposed Scheme, confirmed activity by common pipistrelle, soprano pipistrelle, noctule and *Myotis* species. One call was confirmed as Leisler's bat. Surveys of the woodland area did not confirm the presence of a tree roost. The majority of trees present were assessed to have low or negligible potential to support roosting bats. Two trees were identified to support features with high potential to support roosting bats and a further eleven were confirmed with moderate potential. Five buildings were accessible within this area and were assessed as having low to negligible potential to support roosting bats. No access was available to assess the roosting potential of trees within the southern section of South Cubbington Wood, within the land required for the construction of the Proposed Scheme.
- 2.4.144 Transect surveys along field boundaries within land between North Cubbington Wood and Coventry Road confirmed moderate levels of activity by commoner species (common pipistrelle and soprano pipistrelle). No confirmed or potential roost sites were identified.

CFA18 Stoneleigh, Kenilworth and Burton Green

Overview of bat species status in this area

- 2.4.145 Bat species are listed within the citation for Tocil Wood and Meadow LNR, an area designated for supporting wildlife features of special interest locally. This LNR lays 1,300m from the Proposed Scheme. Habitats within land required for the construction of Proposed Scheme are linked to Tocil Wood and Meadow LNR by the channel Finham Brook, and there are no barriers to prevent bats moving between the LNR and the land required for the construction of Proposed Scheme. Bat species are also listed within the citation for Bubbenhall Wood LWS. The site lies 2,840m from the Proposed Scheme and is a 23.2ha area of ancient native woodland and forms part of the largest complex of ancient native woodlands in Warwickshire. Bat species listed include: whiskered/Brandt's bat, noctule, pipistrelle and brown long-eared bat. The woodland has strong links to habitats contained within land required for the construction of the Proposed Scheme and there are no barriers which would limit dispersal of bat species.
- 2.4.146 There are a number of features within 5km of the land required for construction of the Proposed Scheme that could provide habitat for roosting, foraging and commuting bats. Strong habitat links are present allowing dispersal of bat species between potential roost sites and foraging habitat. The route of the Proposed Scheme within this area passes through a predominantly rural landscape dominated by grassland and arable fields with associated field boundaries of predominantly tall hedgerows with occasional trees and fences. The diversity of habitat types is increased by the presence of discrete parcels of broadleaved and mixed woodland including: Broadwells Wood, Crackley Wood, Black Waste Wood, unnamed woodland associated with Decoy Spinney and Brick Kiln Spinney in the Stoneleigh Estate, Roughknowles Wood, and Echils Wood. These are linked by mature field boundaries and the Kenilworth Greenway. There are a number of small water bodies which provide suitable foraging habitat for bats, particularly within land that lies between A445 Leicester Lane and the B4113 Stoneleigh Road and land surrounding Dalehouse Farm and Milburn Grange.
- 2.4.147 The route of the Proposed Scheme directly crosses six watercourses within this area, comprising the River Avon, Finham Brook, Canley Brook, and a further three unnamed watercourses. These features offer potential commuting and foraging habitat for bat species.
- 2.4.148 There is a low density of settlements along the route of the Proposed Scheme. However, the Proposed Scheme runs through Stoneleigh Park (former National Agricultural Centre), and the edge of Kenilworth town and Burton Green village, in addition to number of isolated farmsteads. Many potential roosting locations are linked to by linear features and/or continuous habitat such as hedgerows, watercourses and woodland edge, which are commonly used by commuting bats to navigate their way through the landscape between key roosting and foraging areas. The route of the Proposed Scheme is crossed by a small number of roads including the A445 Leicester Lane, A46 Kenilworth Bypass, A429 Kenilworth Road and the B4115 Ashow Road, as well as a number of local roads: Dalehouse Lane, Crackley road and Cromwell Lane.
- 2.4.149 Buildings have been identified to be at risk of demolition within this area particularly within Stoneleigh Park the area of Burton Green.

Roosting (trees)

- 2.4.150 Initial assessments of trees were undertaken during detailed ground level assessments to confirm roosts and/or roosting potential. There are 313 trees within the land required for the construction of the Proposed Scheme within this area that were subject to an initial assessment. No confirmed roosts were identified during initial assessment; 36 trees were found to contain features with a high potential to support roosting bats; and, 130 trees found to contain features with a moderate potential to support roosting bats.
- 2.4.151 Where access was available tree climbing was undertaken in order to carry out detailed inspections. Eighty-five of the 313 trees within the land required for construction of the Proposed Scheme were subject to detailed inspection. Two confirmed roosts were identified during tree climbing inspections. Forty of these trees were downgraded to low or negligible potential as a consequence of the inspection.
- 2.4.152 Within 100m of land required for the construction of the Proposed Scheme 373 trees have been subject to initial assessment. Two confirmed roosts were identified, 31 trees were found to contain features with high potential to support roosting bats and 194 trees were found to contain features with moderate potential to support roosting bats.
- 2.4.153 One hundred and eighty-two of the 373 trees within 100m of land required for the construction of the Proposed Scheme were subject to detailed inspection. Eighty-five of these trees were downgraded to low or negligible potential as a consequence of the inspection.
- 2.4.154 Thirty-two trees were subject to emergence survey within the land required for the construction of the Proposed Scheme. Four trees were subject to emergence survey within 100m of land required for the construction of the Proposed Scheme.

Summary

- 2.4.155 There were three confirmed tree roosts identified within the land required for the construction of the Proposed Scheme within this area. Thirty six trees were found to have high potential to support roosting bats and 69 trees were found to have moderate potential to support roosting bats.
- 2.4.156 There were two confirmed tree roosts identified within 100m of land required for the construction of the Proposed Scheme. Thirty eight trees were found to have high potential to support roosting bats and 99 trees were found to have moderate potential to support roosting bats.
- 2.4.157 Details of confirmed tree roosts in this area of the route are provided in Table 43.

Table 43: Confirmed tree roosts within CFA18

Ecology survey code	Location	OS grid reference	Tree species	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ⁶²	Roost description	Distance from the land required for construction of the Proposed Scheme ⁶³ (m)
030-BT1-137020	Park Farm, Stoneleigh (within land between A445 Leicester Lane and B4113 Stoneleigh Road)	SP 33668 70838	Oak	Unknown (unknown)	12 April 2013 Detailed inspection – single dropping found only – not confirmed through DNA analysis	T, D	20cm deep woodpecker hole horizontal. Open feature partially covered.	2m
030-BT1-138064	Stoneleigh Business Park	SP 32873 71475	Beech	Soprano pipistrelle (1)	12 September 2012 Emergence	T, D	Roost confirmed by emergence only. Potential roosting sites considered to be in cavities formed where main branches touch/overlap or a large open cavity in main stem	Within land required
030-BT1-139009	Stoneleigh Business Park	SP 32534 71903	Pedunculate Oak	Unknown (unknown)	03 October 2012 Detailed inspection – droppings found	T, D	Woodpecker hole on underside of lowest limb leads into a sheltered cavity.	5m
030-BT1-139015	Stoneleigh Business Park	SP 32357 71908	Oak	<i>Pipistrellus</i> sp. (1)	03 October 2012 Detailed inspection – 1 roosting <i>Pipistrellus</i> sp. found	T, D	A roosting pipistrelle bat <i>Pipistrellus</i> sp. was seen through endoscope in a small cavity on the main east facing limb at app. 9m in a small hole in a collar scar where a branch has split from the main limb.	Within land required
030-BT1-142001	Milburn Grange Farm, East of Crackley (within land between Dalehouse Lane and A429 Kenilworth Road)	SP 30318 73659	Sycamore	Unknown (1)	11 July 2013 Emergence	T, D	Bat seen emerging from tree during emergence survey on building within Milburn Grange farm. No recording of call made to allow identification of species.	Within land required

⁶² Roost types for which feature is considered suitable coded as follows: T = Transitional roost; M = Maternity roost; S = Satellite roost; H = Hibernation roost, D = Day roost; F = Feeding roost; MAT = Mating roost, N = Night roost. Definitions as provided in Hundt L (2012) *Bat Surveys: Good Practice Guidelines 2nd edition*, Bat Conservation Trust.

⁶³ Hereafter the term 'land required' is used as a shortened version of the full term 'land required for the construction of the Proposed Scheme'.

Roosting (buildings and structures)

- 2.4.158 Desk based initial assessments of roosting potential within buildings and structures were undertaken using historic records, results available from committed developments, aerial photographs and data collected during extended Phase 1 habitat surveys.
- 2.4.159 Initial assessments of 35 buildings and/or structures currently identified to be at high risk of demolition found six buildings to have confirmed roosts. One building identified to be at high risk of demolition was found to contain features with high potential to support roosting bats. Four buildings and/or structures were found to contain features with moderate potential to support roosting bats.
- 2.4.160 A further nine buildings and/or structures within the land required for the construction of the Proposed Scheme (but not currently identified to be at risk of demolition) were subjected to an initial assessment. None were found to have a confirmed roost, one was found to contain features with a high potential and one was found to contain features with a moderate potential to support roosting bats.
- 2.4.161 Within 100m of land required for the construction of the Proposed Scheme a further 23 buildings and structures were subjected to initial assessments. Fifteen were found to have confirmed roosts, none were found to contain features with a high potential and one was found to have features of moderate potential to support roosting bats.
- 2.4.162 Detailed inspections were carried out at 20 buildings or structures identified to be at high risk of demolition. No high or moderate potential buildings were downgraded to low potential or scoped out following detailed inspection
- 2.4.163 Detailed inspections were carried out at 10 buildings and structures within land the required for the construction of the Proposed Scheme but not identified to be at high risk of demolition. No high or moderate potential buildings were downgraded to low potential or scoped out following detailed inspection
- 2.4.164 Detailed inspections were carried out at 61 buildings and structures within 100m of land required for the construction of the Proposed Scheme. No high or moderate potential buildings were downgraded to low potential or scoped out following detailed inspection
- 2.4.165 Where access allowed emergence surveys were carried out at those buildings and structures that were identified to have high to moderate potential for roosting bats. Eighteen buildings and structures identified to be at high risk of demolition, seven buildings and structures within the land required for the construction of the Proposed Scheme and 25 buildings and structures within 100m of land required for the construction of the Proposed Scheme were subject to emergence survey.

Summary

- 2.4.166 Details of confirmed building and structures roosts in this area are provided in Table 44
- 2.4.167 Following the full suite of surveys the results showed that overall within this area there is a low density of building roosts. Six of the buildings and/or structures identified for demolition, four of the buildings and/or structures within the land required for

construction and 15 of the buildings and/or structures within 100m of land required for construction of the Proposed Scheme have confirmed roots.

- 2.4.168 One of the buildings and/or structures identified to have potential for demolition has high potential to support roosting bats. Six of the buildings and/or structures were found to have moderate potential to support roosting bats.
- 2.4.169 One of the buildings and/or structures within land required for the construction of the Proposed Scheme was found to have high potential to support roosting bats. Two of the buildings and/or structures were found to have moderate potential to support roosting bats.
- 2.4.170 One of the buildings and/or structures within 100m of land required for the construction of the Proposed Scheme was found to have high potential to support roosting bats. Ten of the buildings and/or structures were found to have moderate potential to support roosting bats.

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Table 44: Confirmed bat roosts in buildings/structures within CFA18

Ecology survey code	Location	OS grid reference	Building/structure type	Species confirmed utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ⁶⁴	Roost description	Distance from the land required for construction of the Proposed Scheme ⁶⁵ (m)
030-BS1-138001	East Lodge Stoneleigh Business Park	SP 32925 71278	Residential	<i>Pipistrellus</i> species (1)	21 August 2012 Emergence	T, D	Apex of roof on tiled side, West end	16m
030-BS1-138008	Stare Bridge over the River Avon (adjacent to Stoneleigh Business Park) including the River Avon	SP 32949 71433	Other: Bridge	<i>Pipistrellus</i> sp. (1), soprano pipistrelle (1), <i>Myotis</i> species (23), brown long-eared bat (63)	09 August 2012 Emergence	M – Daubenton's and brown long-eared bat D, T – <i>Pipistrellus</i> sp. roost	From arches 2 and 3 (1 arch along if counting from south)	20m
030-BS1-138012	Stare Lodge Stoneleigh Business Park	SP 32893 71434	Residential – This building is identified to be at high risk of demolition	Common pipistrelle (53), soprano pipistrelle (24)	20 August 2012 and 12 September 2012 Emergence	M	Two emergence points. One each on both corners of the south-west facing side of the largest building	Within land required
030-BS1-138020	Office building Stoneleigh Business Park	SP 32761 71304	Office	Common pipistrelle (3)	10 October 2012 Emergence	T, D	Observed emerging from gaps in roof felt	25m
030-BS1-138022	Barn on Stoneleigh Business Park	SP 32778 71289	Barn	Soprano pipistrelle (1)	04 July 2013 Emergence Bat seen returning	T, D	Seen returning and entering though gaps in roof tiles	35m
030-BS1-138023	Mars Pension Trust land (habitats at Stoneleigh Business Park, including the River Avon)	SP 32877 71317	Residential	Soprano pipistrelle (1)	10 July 2013 Emergence – Bat seen returning	T, D	South-east elevation, gap under tile at verge	13m

⁶⁴ Roost types for which feature is considered suitable coded as follows: T = Transitional roost; M = Maternity roost; S = Satellite roost; H = Hibernation roost, D = Day roost; F = Feeding roost; MAT = Mating roost, N = Night roost. Definitions as provided in Hundt L (2012) *Bat Surveys: Good Practice Guidelines 2nd edition*, Bat Conservation Trust.

⁶⁵ Hereafter the term 'land required' is used as a shortened version of the full term 'land required for the construction of the Proposed Scheme'.

Ecology survey code	Location	OS grid reference	Building/structure type	Species confirmed utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ⁶⁴	Roost description	Distance from the land required for construction of the Proposed Scheme ⁶⁵ (m)
030-BS1-138024	Stoneleigh Business Park	SP 32898 71334	Residential – This building is identified to be at high risk of demolition	Brown long-eared bat (3)	12 July 2013 Emergence – Bat seen returning	T, D	Under gable end overhang at the apex of the roof	1m
030-BS1-139002	Toilet Block Stoneleigh Business Park	SP 32619 71692	Other: Toilet Block – This building is identified to be at high risk of demolition	Soprano pipistrelle (1)	22 August 2012 Emergence – Bat seen returning	T, D	South-east corner of the building	Within land required
030-BS1-139008	Stoneleigh Business Park	SP 32533 71806	Residential – This building is identified to be at high risk of demolition	<i>Pipistrellus</i> species (6)	21 August 2013 Emergence	T, D	Gaps under roof tiles/felt. Gap allowing access to roof void. Cavity in wall. Gable end with timbers with gaps – cobwebs though. Grille or air brick.	Within land required
030-BS1-139014	Stoneleigh Business Park	SP 32277 71894	Other: Office (disused)	<i>Pipistrellus</i> species (4)	08 August 2012 Emergence	T, D	Two emergence sites: south-east corner of the building and east-facing inner corner	Within land required
030-BS1-139020	Stoneleigh Business Park	SP 32525 71815	Other: Converted Barn – This building is identified to be at high risk of demolition	<i>Pipistrellus</i> species (6)	21 August 2012 Emergence	T, D	Emergence from between gaps in roof tiles	Within land required
030-BS1-142004	Milburn Grange Farm (within land between Dalehouse Lane and A429 Kenilworth Road)	SP 30371 73629	Barn	Common pipistrelle (3), brown long-eared bat (1)	29 August 2012 Emergence	T, D	Bats seen emerging from gaps between roof timbers	27m

Ecology survey code	Location	OS grid reference	Building/structure type	Species confirmed utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ⁶⁴	Roost description	Distance from the land required for construction of the Proposed Scheme ⁶⁵ (m)
030-BS1-142008	Milburn Grange Farm (within land between Dalehouse Lane and A429 Kenilworth Road)	SP 30327 73643	Barn	Soprano pipistrelle (1)	29 August 2012 Emergence	T, D	Loose tiles, northern aspect of the building	10m
030-BS1-142010	Milburn Grange Farm (within land between Dalehouse Lane and A429 Kenilworth Road)	SP 30319 73621	Residential	Common pipistrelle (2)	10 August 2013 Emergence	D, T	Hanging tiles above northern loft gable window	32m
030-BS1-144001	South Hurst Cottage, Crackley Lane, Kenilworth	SP 28423 75059	Residential	Brandt's bat, common pipistrelle (unknown)	05 June 2013 Initial inspection – droppings found – confirmed through DNA analysis	T, D	Between roof membrane and roof tiles in eastern most roof void	26m
030-BS1-146001	Burton Green Farm (habitat adjacent to Little Pools Wood and Big Pools Wood, including Burton Green)	SP 26765 75443	Residential	Common pipistrelle (1) returning	14 August 2013 Emergence – Bat seen returning	M, T, H	Seen entering gaps under roof tiles	31m
030-BS1-146004	Burton Green Farm (habitat adjacent to Little Pools Wood and Big Pools Wood, including Burton Green)	SP 26747 75454	Barn	Brown long-eared (unknown)	07 August 2012 Inspection – droppings found – not confirmed through DNA analysis	T, M	Droppings under ridge in roof void	48m
030-BS1-146012	Cromwell Lane, Burton Green, Kenilworth (adjacent to Little Pools Wood and Big Pools Wood, including Burton Green)	SP 26951 75930	Residential	<i>Pipistrellus</i> species (unknown)	22 August 2012 Initial inspection – droppings found (2)	T, D	Lifted ridge tile and torn felting	32m
030-BS1-146017	Cromwell Lane, Burton Green, Kenilworth (adjacent to Little Pools Wood and Big Pools Wood, including Burton Green)	SP 26887 75809	Residential	Common pipistrelle (unknown)	26 October 2013 Initial inspection – droppings found – Confirmed through DNA analysis	T, D	Droppings found near chimney in centre of roof void.	Within land required

Ecology survey code	Location	OS grid reference	Building/structure type	Species confirmed utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ⁶⁴	Roost description	Distance from the land required for construction of the Proposed Scheme ⁶⁵ (m)
030-BS1-146021	Cromwell Lane, Burton Green, Kenilworth (adjacent to Little Poots Wood and Big Poots Wood, including Burton Green)	SP 26942 75809	Residential	Common pipistrelle (1)	06 August 2012 Emergence	T, D	Emerged from north west corner, close to dormer window	9m
030-BS1-146024	Cromwell Lane, Burton Green, Kenilworth (adjacent to Little Poots Wood and Big Poots Wood, including Burton Green)	SP 26967 76007	Residential	Brown long-eared bat (DNA analysis inconclusive)	10 September 2012 Initial inspection – droppings found (30-40 droppings)	T, D	Droppings and feeding remains found within roof void	46m
030-BS1-146026	Red Lane, Burton Green, Kenilworth (adjacent to Little Poots Wood and Big Poots Wood, including Burton Green)	SP 26862 75671	Residential	Common pipistrelle (1)	10 June 2013 Emergence	T, D	Seen emerge from gable end of the property	within land required
030-BS1-146027	Red Lane, Burton Green, Kenilworth (adjacent to Little Poots Wood and Big Poots Wood, including Burton Green)	SP 26855 75676	Residential	Common pipistrelle (1)	10 July 2013 Emergence	T, D	seen emerge from eaves behind soffit at front of house.	within land required
030-BS1-146039	Burton Green, Kenilworth (adjacent to Little Poots Wood and Big Poots Wood, including Burton Green)	SP 26747 76151	Other: Shed	<i>Pipistrellus</i> species (unknown)	28 November 2012 Initial inspection (very few droppings)	T, D	Scattered droppings found throughout shed	35m
030-BS1-146069	Burton Green, Kenilworth (adjacent to Little Poots Wood and Big Poots Wood, including Burton Green)	SP 26880 75680	Other: Garage	Brown long-eared bat (unknown)	28 November 2012 Initial inspection – droppings and feeding remains	T, D	Droppings and feeding remains found in roof void	Within land required

Bat activity surveys

- 2.4.171 Thirteen transect routes have been surveyed within land required for the construction of the Proposed Scheme as shown in Table 45.
- 2.4.172 The two most southern transects (030-BA1-137001 and 030-BA1-138001) assessed activity within land north of Stoneton House, between A445 Leicester Lane and B4113 Stoneleigh Road. Habitats include arable field bound by a mix of hedgerows and fence. An unnamed area of broadleaved plantation associated with small discrete area of semi-natural broadleaved woodland (Decoy Spinney) is present together with a discrete area of semi natural broad leaf woodland Hares Parlour. Scattered water bodies are present. The habitats have strong habitat links to potential roost sites including buildings associated with Stonehouse Farm, Park Farm and Stoneleigh Business Park. The corridor of the B4113 Stoneleigh Road is unlit and supports continuous vegetated links comprised of tall hedgerows and many mature trees.
- 2.4.173 One transect (030-BA1-139001) assessed activity within habitats associated with Stoneleigh Business Park, including the River Avon, a mosaic of habitats including areas of woodland to the north and south outside of the Proposed Scheme. The estate is bound to the north, east and west by the River Avon which has potential to support commuting/foraging activity and provide a strong habitat link to those habitats outside of the Proposed Scheme. Within the estate are buildings with potential to support roosts and discrete areas of woodland.
- 2.4.174 One transect (030-BA1-140001) assessed activity within habitats bound between the corridor of the B4115 Ashow Road and the A46 Kenilworth Road. The habitats are dominated by large arable and improved grassland fields. The corridor of the A46 Kenilworth road is bound by strips of broadleaf plantation and has potential to support commuting/foraging activity.
- 2.4.175 One transect (030-BA1-140002) was located within land adjacent to New Kingswood Farm, south of Dalehouse Lane, comprising large arable fields bound by fences. The habitats sit adjacent to Kenilworth Golf Course and comprises a mix of amenity grassland and discrete areas of broadleaf and conifer plantation.
- 2.4.176 One transect (030-BA1-141001) assessed habitats associated with Dalehouse Farm and Milburn Grange, between Dalehouse Lane and A429 Kenilworth Road, comprising large arable fields and improved grassland. A collection of water bodies are present along field boundaries which provide suitable foraging habitat for bats. The channel of the Finham Brook flows through these habitats to the south and west and was included within the survey. This watercourse provides strong habitat links to habitats suitable for bat species outside of the Proposed Scheme.
- 2.4.177 Four transects covered habitats north of Crackley, comprised of areas of woodland, including Crackley Wood, Birches Wood and Roughknowles Wood. The areas of woodland are bordered by arable field and improved grassland. The southern habitats are bordered by the channel of Finham Brook. To the west is the Kenilworth Greenway, which intersects the western side of Crackley Wood. Both Finham Brook and Kenilworth Greenway provide strong habitat links to suitable habitats for bats outside of the Proposed Scheme.

- 2.4.178 Two transects (030-BA1-144001 and 030-BA1-145001) are located within habitats associated with land north of Crackley Lane. Habitats comprised Broadwells Wood bordered by large arable fields and associated field boundaries. The line of the Kenilworth Greenway runs to the west, providing strong habitat links to areas of woodland located to the north and south. The survey assessed activity both within and along the woodland edge of Broadwells Wood and along the woodland edge of Black Waste Wood to the north. Potential roost sites include areas of woodland and buildings associated with South Hurst Farm, Brockendon Grange Farm and Burton Green.
- 2.4.179 One transect (030-BA1-146001) was located within land west of Burton Green and assessed activity within along the woodland edges of Little Poors Wood and Big Poors Wood. Habitats include areas of improved grassland adjacent to residential houses associated with the west urban edges of Burton Green.
- 2.4.180 The following bat species have been recorded during the range of bat activity surveys conducted in support of the assessment in this area: common pipistrelle; brown long-eared bat; soprano pipistrelle; noctule; Natterer's; Daubenton's; Leisler's; and serotine. Some calls recorded could not be identified to species level and *Pipistrellus* species and *Myotis* species have also been recorded.
- 2.4.181 Transect survey results are provided in Table 46 to Table 59.

Table 45: Bat activity surveys conducted within CFA18

Ecology survey code	Transect Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA1-137001	Park Farm, Stoneleigh (within land between A445 Leicester Lane and B4113 Stoneleigh Road)	12	10 October 2012	06 August 2013	EC-06-093,B5
030-BA1-138001	Within land between A445 Leicester Lane and B4113 Stoneleigh Road	11	17 July 2012	07 June 2013	EC-06-094,G7
030-BA1-139001	Stoneleigh Business Park	13	17 July 2012	06 June 2012	EC-06-094,C4
030-BA1-140001	Land between the corridor of the B4115 Ashow Road and the A46 Kenilworth Road	11	04 August 2012	08 June 2013	EC-06-095,G7
030-BA1-140002	Land on the south-east side of Dalehouse Lane (between Dalehouse Lane and A429 Kenilworth Road)	10	27 September 2012	30 July 2013	EC-06-095,B6
030-BA1-141001	Milburn Grange Farm (habitat associated with land between Dalehouse Lane and A429 Kenilworth Road)	11	16 July 2012	04 June 2013	EC-06-096,G3
030-BA1-142001	Cryfield Grange Farm (habitat associated with land between Dalehouse Lane and A429 Kenilworth Road)	11	24 July 2012	12 June 2013	EC-06-097,H5

Ecology survey code	Transect Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA1-142002	Crackley Farm (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood)	6	01 August 2012	28 September 2012	EC-06-097,G8
030-BA1-142003	Crackley Farm (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood)	4	01 August 2012	04 September 2012	EC-06-097,G2
030-BA1-143001	Cryfield Grange Farm (habitat associated with land between Dalehouse Lane and A429 Kenilworth Road)	6	24 April 2013	13 June 2013	EC-06-097,D4
030-BA1-143002	Cryfield Grange Farm and Rough Knowles Wood (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood)	4	24 July 2012	12 September 2012	EC-06-097,E4
030-BA1-144001	Brockendon Grange Farm, South Hurst Farm and Crackley Lane Farm (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood)	8	29 April 2013	07 August 2013	EC-06-098,F5
030-BA1-145001	Brockendon Grange Farm, South Hurst Farm and Crackley Lane Farm (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood)	8	29 April 2013	07 August 2013	EC-06-098,E7
030-BA1-146001	Burton Green Farm (habitat adjacent to Little Poors Wood and Big Poors Wood, including Burton Green)	10	26 July 2012	27 June 2013	EC-06-099,G8

Table 46: Bat activity transect survey results – transect 030-BA1-137001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-137001	Park Farm, Stoneleigh (within land between A445 Leicester Lane and B4113 Stoneleigh Road)				Tree line along track separating arable field – mature oak trees 5-10m apart. Old barn. Arable fields.																
Visit number and date	Weather conditions				Total species passes during transect survey ⁶⁶																
	Temp (°C)	Cloud (0-8) ⁶⁷	Rain (0-5) ⁶⁸	Wind (0-12) ⁶⁹	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: Dusk 10 October 2012	13	7-5	0	0	5	4	0	1	0	0	0	0	0	0	2	0	0	1	0	0	0
Visit 2: Dawn 12 October 2012	9/10	6/8	0	0-1/1-2	0	1	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0
Visit 3: Dusk 16 April 2013	13.8	1	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dawn 17 April 2013	8.5	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dusk 08 May 2013	12	1	0	3	2	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 6: Dawn 09 May 2013	7	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: Dusk 11 June 2013	16.2	4	0	2	9	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Visit 8: Dawn 12 June 2013	14.1	8	0	2-3	5	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
Visit 9: Dusk 01 July 2013	15.8	7	0	0	6	3	0	0	0	0	0	0	0	0	1	1	0	1	3	0	0
Visit 10: Dawn 02 July 2013	11.5	7	0	0	0	2	0	0	0	0	0	0	0	0	1	2	0	0	0	1	0
Visit 11: Dusk 05 August 2013	19	6	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 12: Dawn 06 August 2013	10.5	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

⁶⁶ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

⁶⁷ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

⁶⁸ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

⁶⁹ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.

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Table 47: Bat activity transect survey results – transect 030-BA1-138001

Ecology survey code	Transect location				Description of habitats covered by transect																	
030-BA1-138001	Stoneleigh Business Park				Grassland adjacent to river. Mature trees to the west of river, farmland to east with occasional tree on bank. Bridges across river.																	
Visit number and date	Weather conditions				Total species passes during transect survey																	
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es	
Visit 1: Dusk 17 July 2012	20	6	0	3	6	8	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 2: Dusk 16 August 2012	19	7	0	3	7	13	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 3: Dawn 17 August 2012	17	8	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 4: Dusk 11 September 2012	12.6	6	0	1	6	5	0	1	0	0	0	0	0	0	4	0	0	0	0	0	0	
Visit 5: Dawn 11 October 2012	14	8	0	0-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 6: Dusk 19 April 2013	9	2	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 7: Dawn 20 April 2013	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 8: Dusk 23 May 2013	8	2	0	0	9	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 9: Dawn 24 May 2013	6	1	0	0/1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
Visit 10: Dusk 06 June 2013	13	0	0	0	4	7	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0	
Visit 11: Dawn 07 June 2013	8	0	0	0	7	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Table 48: Bat activity transect survey results – transect 030-BA1-139001

Ecology survey code	Transect location				Description of habitats covered by transect																	
030-BA1-139001	Stoneleigh Business Park				Improved grassland adjacent to river. North-west is area of scrub surrounding sludge tank and bordered by woodland. Bridge over river.																	
Visit number and date	Weather conditions				Total species passes during transect survey																	
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es	
Visit 1: Dusk 17 July 2012	19	2	0	2	16	6	0	5	0	0	0	0	0	0	9	1	0	2	0	0	0	
Visit 2: Dusk 22 August 2012	16	1	1	1	14	17	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	
Visit 3: Dawn 23 August 2012	12	0	0	0	4	11	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 4: Dusk 11 September 2012	12	4	0	1	18	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 5: Dawn 11 October 2012	9	8	0	0	2	6	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	
Visit 6: Dusk 22 October 2012	13	8	0-1	0-1	2	5	0	5	0	0	0	0	0	0	4	2	0	1	0	0	0	
Visit 7: Dawn 23 October 2012	13	8	0-1	0-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 8: Dusk 18 April 2013	9	2	0	3	1	4	0	1	0	2	0	0	0	0	1	0	0	0	0	0	0	
Visit 9: Dawn 19 April 2013	5	3	0	2	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	
Visit 10: Dusk 13 May 2013	11	8	1	1	9	6	0	0	0	9	0	0	0	0	1	0	0	0	0	0	0	
Visit 11: Dawn 14 May 2013	7	0	0	2/3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 12: Dusk 05 June 2013					7	5	0	0	0	3	0	0	0	0	8	0	0	1	0	0	0	
Visit 13: Dawn 06 June 2013	8	7	0	2	8	7	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	

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Table 49: Bat activity transect survey results – transect 030-BA1-140001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-140001	Stoneleigh Business Park				Arable land between A-road and B-road.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: 04 August 2012	13.1	2	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dusk 28 September 2012	13	3/7	0	0-1	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dawn 29 September 2012	10/9	0	0	0-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dusk 09 October 2012	9.2	1	0	0-1	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dusk 29 April 2013	12	7	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: Dawn 30 April 2013	6	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: 09 May 2013	9.5	2	1	3	14	6	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 8: Dusk 29 May 2013	11	8	2	0-1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 9: Dawn 30 May 2013	12	8	2/3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 10: Dusk 07 June 2013	14	6	0	1	8	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 11: Dawn 08 June 2013	9	7	0	1	6	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0

Table 50: Bat activity transect survey results – transect 030-BA1-140002

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-140002	Land on the south-east side of Dalehouse Lane (between Dalehouse Lane and A429 Kenilworth Road)				Semi-improved grassland adjacent to golf course. Improved grassland fields for horse grazing with scattered scrub. Three ponds to east side; farm buildings on/near south.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: Dusk 27 September 2012	8	3	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dawn 28 September 2012	7.5	1	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dusk 18 October 2012	12.3	5	2	4	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dawn 19 October 2012	7.9	8	0	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dusk 30 April 2013	10/4	0		0-1	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: Dawn 01 May 2013	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: 16 May 2013	8	0	0	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: 17 May 2013	10	0	0	2	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 9: 29 July 2013	18	0	0	2	11	13	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 10: 30 July 2013	18	0	0	2	2	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Table 51: Bat activity transect survey results – transect 030-BA1-141001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-141001	Milburn Grange Farm (habitat associated with land between Dalehouse Lane and A429 Kenilworth Road)				Arable land and improved grassland with species poor hedgerows; several ponds; south end of site near to river.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: Dusk 16 July 2012	17	8	0	2	12	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 2: Dusk 09 August 2012	23	3	0	1	9	0	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 3: Dusk 10 September 2012	17.6	8	0	5	10	3	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
Visit 4: Dawn 11 September 2012	13	8	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dawn 10 October 2012	8.5	8	0	0-1	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 6: Dusk 17 April 2013	15.4	8	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: Dawn 18 April 2013	10.7	0	0	4-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: Dusk 09 May 2013	10	4	0	3-4	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 9: Dawn 10 May 2013	10	7	0	3-4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 10: Dusk 03 June 2013	16.3	1	0	0-1	8	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 11: Dawn 04 June 2013	9.7	1	0	0-1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 52: Bat activity transect survey results – transect 030-BA1-142001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-142001	Cryfield Grange Farm (habitat associated with land between Dalehouse Lane and A429 Kenilworth Road)				Arable land with hedgerows and areas of broadleaved woodland; stream.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: Dusk 24 July 2012	24	1	0	0	26	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 2: Dusk 15 August 2012	15.5/16.7	1	0	2-3	16	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dawn 16 August 2012	14.2	6	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dusk 05 September 2012	17/15	1	0	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dusk 10 September 2012	13/14	8/3	0	0-1/2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: Dusk 15 April 2013	14.9/12.1	6/4	0	1	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Visit 7: Dawn 16 April 2013	10.6/10.2	8	1/0	3/1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: Dusk 07 May 2013	17	1	0	1	17	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Visit 9: Dawn 08 May 2013	14	3	0	1	5	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
Visit 10: Dusk 11 June 2013	17.6	2	0	1-2	12	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 11: Dawn 12 June 2013	13.9	8	0	2	6	3	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0

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Table 53: Bat activity transect survey results – transect 030-BA1-142002

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-142002	Crackley Farm (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood together with adjacent habitats including the Kenilworth Greenway)				Agricultural pasture surrounded by hedgerows. Pool with trees around in centre of field.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: Dusk 01 August 2012	15	8	2	5	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dusk 13 August 2012	17.2/15.9	7	0	3-4	21	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 3: Dawn 14 August 2012	15	4	0	2	29	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Visit 4: Dawn 04 September 2012	13.2	3-4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dusk 27 September 2012	10.7/9.5	6-8		2-3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: Dawn 28 September 2012	9.1/8	0-2	0	0-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 54: Bat activity transect survey results – transect 030-BA1-142003

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-142003	Crackley Farm (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood together with adjacent habitats including the Kenilworth Greenway)				Poor semi-improved grassland to east; arable land to centre. Several ponds, mainly to west. Adjacent to disused railway (cyclepath) with bridge underpass.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Es
Visit 1: Dusk 01 August 2012	18/16	6-7	1	3-4	18	4	0	0	0	0	0	0	0	0	2	1	0	0	1	0	0
Visit 2: Dusk 13 August 2012	17.2-15.9	7	0	3-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dawn 14 August 2012	15	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dawn 04 September 2012	13.2	3-4	0	2	3	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0

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Table 55: Bat activity transect survey results – transect 030-BA1-143001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-143001	Cryfield Grange Farm (habitat associated with land between Dalehouse Lane and A429 Kenilworth Road) and Roughknowles Wood				Arable land and broadleaved woodland.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: Dusk 24 April 2013	14	7	1	0	13	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dawn 25 April 2013	11	4	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
Visit 3: Dusk 08 May 2013	11	2	0	1	10	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dawn 09 May 2013	6.5	1	0	1-2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dusk 12 June 2013	14	8	1	1	12	5	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0
Visit 6: Dawn 13 June 2013	11	8	0	2	5	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0

Table 56: Bat activity transect survey results – transect 030-BA1-143002

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-143002	Cryfield Grange Farm (habitat associated with land between Dalehouse Lane and A429 Kenilworth Road) and Rough Knowles Wood				Arable land and broadleaved woodland.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: Dusk 24 July 2012	24	0	0	1	10	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dusk 15 August 2012	16	2	0	3	9	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dawn 16 August 2012	14	6	0-3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dusk 12 September 2012	13	1	0	3	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Table 57: Bat activity transect survey results – transect 030-BA1-144001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-144001	Brockendon Grange Farm, South Hurst Farm and Crackley Lane Farm (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood together with adjacent habitats including the Kenilworth Greenway)				Oak woodland; arable land, ponds to south and east.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: Dusk 29 April 2013	8	6	0-1	2-4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dusk 13 May 2013	8	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dusk 10 June 2013	10	1	0	1	15	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
Visit 4: Dawn 11 June 2013	7	6	0	1	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dusk 17 July 2013	17	0	0	0	10	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 6: Dawn 18 July 2013	15	0	0	0	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: Dusk 06 August 2013	15	0	0	0	14	2	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0
Visit 8: Dawn 07 August 2013	13	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 58: Bat activity transect survey results – transect 030-BA1-145001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-145001	Brockendon Grange Farm, South Hurst Farm and Crackley Lane Farm (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood together with adjacent habitats including the Kenilworth Greenway)				Arable land close to broadleaved woodland; pond.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: Dusk 29 April 2013	8	7	1/0	4	4	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 2: Dusk 13 May 2013	8	4	0	3	7	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 3: Dusk 11 June 2013	13	1	0	2	15	2	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
Visit 4: Dawn 12 June 2013	12.5	7	1	3	12	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0
Visit 5: Dusk 17 July 2013	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: Dawn 18 July 2013	15.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: Dusk 06 August 2013	13	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: Dawn 07 August 2013	12.5	7	1	0-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Table 59: Bat activity transect survey results – transect 030-BA1-146001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-146001	Burton Green Farm (habitat adjacent to Little Pools Wood and Big Pools Wood, including Burton Green)				Large mature broadleaved woodland with pond at edge; arable fields and improved grassland to south.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: 07 July 2012	20	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 2: Dusk 26 July 2012	20	1	0	0	15	0	0	8	0	0	0	0	0	0	0	2	0	0	0	0	0
Visit 3: Dusk 07 August 2012	16	8	1	1	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dusk 30 August 2012	18	8	0	4	8	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dawn 11 September 2012	14	3		3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: Dusk 17 September 2012	14	3	0	1	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: Dawn 16 October 2012	5	7		6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: Dusk 22 April 2013	9/11	8	0	2	5	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 9: Dawn 23 April 2013	6	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 10: Dusk 26 June 2013	14	1	0	3	10	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 11: Dawn 27 June 2013	11	6	0	1	8	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 12: 26 July 2013	15.5	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Static detectors

- 2.4.182 A total of 16 static survey locations have been assessed within this area as shown in Table 11. The dominant species recorded are common and soprano pipistrelle as would be expected due to both species being widely distributed and common within Warwickshire and the UK.
- 2.4.183 A broad range of habitats was encompassed by the static surveys and were predominantly associated with each of the transect survey routes. The statics were positioned as follows:
- two statics were located within land north of Stoneton House, between Leicester Lane and B4113 Stoneleigh Road. The surveys assessed activity along a farm track dividing arable fields and woodland edge associated with the River Avon;
 - two statics have been located within the boundaries of Stoneleigh Business Park and were located to assess activity along woodland edge, wooded river banks, grassland and woodland belts. A broad range of habitats was encompassed by the static surveys including rough scrub, domestic gardens, improved grassland, arable fields, and pasture field with associated hedgerows, broad-leaved woodland, water bodies and canals;
 - three static surveys were located within habitats associated with Dalehouse Farm and Millburn Grange and assessed activity along Finham Brook, adjacent to a complex of small water bodies and woodland edge;
 - three static surveys assessed habitats within land north of Crackley Lane and assessed bat activity along woodland edge and Finham Brook;
 - two statics were located within land north of Crackley Lane and assessed bat activity within Broadwell Wood and along field boundaries near to small water bodies; and
 - three static surveys were located along Kenilworth Greenway south of Burton Green, targeted as initial assessments identified the linear route with potential to support commuting routes for bats.

Table 60: Bat static surveys conducted within CFA18

Ecology survey code	Static Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA2-137001	Park Farm, Stoneleigh (within land between A445 Leicester Lane and B1443 Stoneleigh Road)	6	04 October 2012	14 August 2013	EC-06-093,C5
030-BA2-138001	Stoneleigh Business Park	6	26 July 2012	10 June 2013	EC-06-093,A4
030-BA2-138002	Stoneleigh Business Park	7	26 July 2012	10 June 2013	EC-06-094,F5
030-BA2-139001	Stoneleigh Business Park	7	26 July 2012	10 June 2013	EC-06-094,A6

Ecology survey code	Static Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA2-139002	Stoneleigh Business Park	6	16 August 2012	10 June 2013	EC-06-095,H6
030-BA2-142001	Milburn Grange Farm (habitat associated with land between Dalehouse Lane and A429 Kenilworth Road)	3	25 April 2013	09 August 2013	EC-06-096,F6
030-BA2-142002	Part of Cryfield Grange Farm (habitat associated with land between Dalehouse Lane and A429 Kenilworth Road)	3	14 April 2013	10 June 2013	EC-06-096,C6
030-BA2-143001	Part of Cryfield Grange Farm (habitat associated with land between Dalehouse Lane and A429 Kenilworth Road) and Crackley Farm, Kenilworth (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood together with adjacent habitats including the Kenilworth Greenway)	7	26 July 2012	10 June 2013	EC-06-097,F6
030-BA2-144001	Brockendon Grange Farm, South Hurst Farm and Crackley Lane Farm (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood together with adjacent habitats including the Kenilworth Greenway)	5	15 April 2013	06 August 2013	EC-06-097,D6
030-BA2-144002	Brockendon Grange Farm, South Hurst Farm and Crackley Lane Farm (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood)	5	15 April 2013	06 August 2013	EC-06-097,B7
030-BA2-145001	Brockendon Grange Farm, South Hurst Farm and Crackley Lane Farm (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood)	5	15 April 2013	06 August 2013	EC-06-098,G7
030-BA2-146001	Black Waste Wood	6	19 July 2012	21 May 2013	EC-06-098,A7
030-BA2-146002	Little Poors Wood	5	02 August 2012	30 July 2013	EC-06-099,F6
030-BA2-146003	Hodgetts Lane, Burton Green, Kenilworth, Warwickshire (habitat adjacent to Little Poors Wood and Big Poors Wood, including Burton Green)	2	24 July 2013	14 August 2013	EC-06-099,F6

Table 61: Summary of static detector monitoring results for 030-BA2-137001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-137001	Park Farm, Stoneleigh (within land between A445 Leicester Lane and B1443 Stoneleigh Road)	SP 33620 70585	Field edge of tall hedgerow.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁷⁰ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
04 October 2012 – 09 October 2012	5	24	713	1	0	0	0	0	0	0	0	24	0	0	0	4	0	0
08 May 2013 – 15 May 2013	7	25	86	0	0	0	0	0	0	0	0	4	0	0	1	1	0	0
03 June 2013 – 10 June 2013	7	5	5	0	0	0	0	0	0	0	0	2	0	0	1	2	0	0
10 July 2013 – 17 July 2013	7	58	27	0	0	0	0	0	0	0	0	10	0	0	1	1	0	0

⁷⁰ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 62: Summary of static detector monitoring results for 030-BA2-138001

Ecology survey code	Location	OS Grid				Description of habitat												
030-BA2-138001	Stoneleigh Business Park	SP 33308 70957				Hedgerow, close to edge of broad-leaved woodland.												
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁷¹ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
14 April 2013 – 21 April 2013	7	19	60	0	0	0	0	0	0	0	0	7	0	0	0	4	0	0
03 June 2013 – 10 June 2013	7	19	46	0	0	0	0	0	0	0	0	3	0	0	2	2	0	0

⁷¹ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 63: Summary of static detector monitoring results for 030-BA2-138002

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-138002	Stoneleigh Business Park	SP 33005 71424	River bank near entrance 1.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁷² (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
14 April 2013 – 21 April 2013	7	248	1123	0	0	0	0	0	0	0	0	387	0	0	0	4	1	1
03 June 2013 – 10 June 2013	7	176	45	0	0	0	0	0	0	0	0	35	0	0	0	3	0	0

⁷² Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 64: Summary of static detector monitoring results for 030-BA2-139001

Ecology survey code	Location	OS Grid		Description of habitat														
030-BA2-139001	Stoneleigh Business Park	SP 32169 72191		Riverside, set in plantation woodland.														
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁷³ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
14 April 2013 – 21 April 2013	7	245	534	0	0	0	0	0	0	0	0	1588	0	0	0	1	0	2
03 June 2013 – 10 June 2013	7	255	1982	0	0	0	0	0	0	0	0	38	0	0	1	0	0	0

⁷³ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 65: Summary of static detector monitoring results for 030-BA2-139002

Ecology survey code	Location	OS Grid		Description of habitat														
030-BA2-139002	Stoneleigh Business Park	SP 32041 72336 and SP 33005 71424		Field margin, grassland/wood edge and riverbank														
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁷⁴ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
14 April 2013 – 21 April 2013	7	87	31	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0
03 June 2013 – 10 June 2013	7	822	1276	1	0	0	0	0	0	0	0	103	0	0	0	0	0	0

⁷⁴ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 66: Summary of static detector monitoring results for 030-BA2-142001

Ecology survey code	Location	OS Grid				Description of habitat													
030-BA2-142001	Milburn Grange Farm (habitat associated with land between Dalehouse Lane and A429 Kenilworth Road)	SP 30520 73733				Hedgerow.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁷⁵ (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep	
25 April 2013 – 30 April 2013	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
21 May 2013 – 28 May 2013	7	43	6	0	0	0	0	0	0	0	0	1	0	0	2	1	0	0	
02 June 2013 – 09 June 2013	7	8	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	

⁷⁵ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 67: Summary of static detector monitoring results for 030-BA2-142002

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-142002	Part of Cryfield Grange Farm (habitat associated with land between Dalehouse Lane and A429 Kenilworth Road)	SP 30098 74012	Stream edge, willow and oak, wet grassland.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁷⁶ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
14 April 2013 – 21 April 2013	7	148	128	0	0	0	0	0	0	0	0	8	0	0	3	6	1	1
08 May 2013 – 15 May 2013	7	138	17	0	0	0	0	0	0	0	0	8	0	0	1	1	0	0

⁷⁶ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 68: Summary of static detector monitoring results for 030-BA2-143001

Ecology survey code	Location	OS Grid				Description of habitat												
030-BA2-143001	Part of Cryfield Grange Farm (habitat associated with land between Dalehouse Lane and A429 Kenilworth Road) and Crackley Farm, Kenilworth (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood together with adjacent habitats including the Kenilworth Greenway)	SP 29211 74380				Arable/woodland edge.												
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁷⁷ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
26 July 2012 – 02 August 2012	7	171	11	0	0	0	0	0	0	0	0	14	0	0	1	0	0	4
22 August 2012 – 29 August 2012	7	932	66	0	0	0	0	0	0	0	0	10	0	0	3	3	0	0
04 September 2012 – 12 September 2012	8	58	16	0	0	0	0	0	0	0	0	7	0	0	2	4	0	0
04 October 2012 – 11 October 2012	7	370	266	2	0	0	0	0	0	0	0	7	0	0	2	5	0	0
14 April 2013 – 21 April 2013	7	31	33	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0
08 May 2013 – 15 May 2013	7	47	5	0	0	0	0	0	0	0	0	7	0	0	2	1	0	0
03 June 2013 – 10 June 2013	7	334	63	0	0	0	0	0	0	0	0	61	0	0	3	27	1	0

⁷⁷ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 69: Summary of static detector monitoring results for 030-BA2-144001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-144001	Brockendon Grange Farm, South Hurst Farm and Crackley Lane Farm (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood together with adjacent habitats including the Kenilworth Greenway)	SP2877574734	Within hedgerows facing arable fields, with country road and woodland behind SM2.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁷⁸ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
15 April 2013 – 22 April 2013	7	1	1	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0
14 May 2013 – 21 May 2013	7	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 June 2013 – 18 June 2013	7	84	11	0	0	0	0	0	0	0	0	9	0	0	2	31	0	0
02 July 2013 – 09 July 2013	7	67	14	0	0	0	0	0	0	0	0	15	0	0	11	13	0	0
30 July 2013 – 06 August 2013	7	130	38	0	0	0	0	0	0	0	0	3	0	0	8	4	0	0

⁷⁸ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 70: Summary of static detector monitoring results for 030-BA2-144002

Ecology survey code	Location	OS Grid			Description of habitat													
030-BA2-144002	Brockendon Grange Farm, South Hurst Farm and Crackley Lane Farm (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood together with adjacent habitats including the Kenilworth Greenway)	SP 28391 74831			Arable edge with hedgerow, pond in close proximity.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁷⁹ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
15 April 2013 – 22 April 2013	7	16	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 May 2013 – 21 May 2013	7	404	2	0	0	0	0	0	0	0	0	4	0	0	1	0	0	0
11 June 2013 – 18 June 2013	7	719	1	0	0	0	0	0	0	0	0	27	0	0	2	0	0	0
02 July 2013 – 09 July 2013	7	1282	9	0	0	0	0	0	0	0	0	8	0	0	2	2	0	0
30 July 2013 – 06 August 2013	7	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

⁷⁹ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 71: Summary of static detector monitoring results for 030-BA2-145001

Ecology survey code	Location	OS Grid	Description of habitat																
030-BA2-145001	Brockendon Grange Farm, South Hurst Farm and Crackley Lane Farm (associated with woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood together with adjacent habitats including the Kenilworth Greenway)	SP 27866 75094	On edge of broadleaf woodland facing arable field.																
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁸⁰ (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep	
15 April 2013 – 22 April 2013	7	35	4	0	0	0	0	0	0	0	0	12	0	0	0	1	0	0	
14 May 2013 – 21 May 2013	7	420	97	0	0	0	0	0	0	0	0	4	0	0	1	0	0	0	
11 June 2013 – 18 June 2013	7	149	20	0	0	0	0	0	0	0	0	34	0	0	0	0	0	0	

⁸⁰ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 72: Summary of static detector monitoring results for 030-BA2-146001

Ecology survey code	Location	OS Grid				Description of habitat													
030-BA2-146001	Black Waste Wood	SP 27057 75762				Wooded disused railway corridor.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁸¹ (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep	
19 July 2012 – 26 July 2012	7	466	37	0	4	0	0	0	0	0	0	384	3	0	1	0	0	0	
07 August 2012 – 14 August 2012	7	563	14	0	0	0	0	0	0	0	0	94	0	0	0	0	0	0	
10 September 2012 – 16 September 2012	6	142	62	1	1	0	0	0	0	0	0	101	0	0	0	0	0	0	
15 October 2012 – 20 October 2012	5	1415	98	0	4	0	0	0	0	0	0	144	0	0	0	0	0	0	
15 April 2013 – 22 April 2013	7	90	5	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	
14 May 2013 – 21 May 2013	7	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

⁸¹ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 73: Summary of static detector monitoring results for 030-BA2-146002

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-146002	Little Pools Wood	SP 26827 75924	Wooded disused railway corridor.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁸² (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
02 August 2012 – 04 August 2012	2	57	2	0	1	0	0	0	0	0	0	36	0	0	7	0	0	0
15 October 2012 – 18 October 2012	3	35	10	0	8	0	0	0	0	0	0	18	0	0	0	0	0	0
15 April 2013 – 22 April 2013	7	58	59	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0

⁸² Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 74: Summary of static detector monitoring results for 030-BA2-146003

Ecology survey code	Location	OS Grid	Description of habitat																
030-BA2-146003	Burton Green, Kenilworth, Warwickshire (habitat adjacent to Little Poors Wood and Big Poors Wood, including Burton Green)	SP 26845 75969	Garden back by broad leaved woodland.																
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁸³ (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep	
24 July 2013 – 31 July 2013	7	169	80	0	0	0	0	0	0	0	0	4	0	0	2	4	0	0	

⁸³ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Back tracking

- 2.4.184 Backtracking surveys to assess tree roosts were undertaken at Echils Wood in 2012. Echils wood is located within the boundaries of Stoneleigh Park (former National Agricultural Centre). No confirmed tree roosts were identified.

Hand netting and swarming

- 2.4.185 Additional surveys have included swarming and hand netting surveys at Stare Bridge within the boundaries of Stoneleigh Business Park, located 20m of land required for the construction of the Proposed Scheme. Hand netting confirmed the presence of the *Myotis* sp. roosting within the bridge was used to confirm species through the capture of a lactating female caught whilst emerging from the bridge.
- 2.4.186 Swarming surveys found no evidence of swarming behaviour centred on Stare Bridge. During the swarming survey undertaken in September 2012 song flight activity⁸⁴ by both common and soprano pipistrelle was observed around a group of trees located immediately to the north of the bridge. This suggests the presence of pipistrelle tree mating roosts within this group of trees, located beyond 100m of the land required for the construction of the Proposed Scheme.

Discussion

- 2.4.187 Information from WBRC has identified the presence of a minimum of eight species of bat within 10km of the route of the Proposed Scheme within this area, seven of which were confirmed during surveys. Species include common pipistrelle, soprano pipistrelle, noctule, Daubenton's, Natterer's, Leisler's and serotine. These records are mainly of bats in flight. There were 31 records of roosts/emergence. Of these, there are records held for a single common pipistrelle roost site located within the land required for construction of the Proposed Scheme, but no status for the roost was given.
- 2.4.188 The desk study records include a number of brown long-eared bat roosts, including maternity and hibernation records, within surrounding settlements. This supports the assumption that this species is under recorded by the static and transect surveys. The remainder of roosts returned from the desk study records are *Pipistrellus* species along with a range of *Myotis* species; Natterer's, Brandt's and whiskered as well as a single recorded roosting noctule. These records all relate to small numbers of bats and are not thought to be maternity colonies. The majority of desk study records relating to roosting bats are associated with settlements outside of the land required for the construction of the Proposed Scheme, such as Stoneleigh, Kenilworth and the University of Warwick. This is likely to reflect the bias towards buildings in the desk study records for bats.
- 2.4.189 The assemblage of species recorded during surveys within this area is consistent with the desk study data. A total of nine species were recorded as present within 10km of the route of the Proposed Scheme within this area and only whiskered bat has not been identified during the surveys conducted in 2012/2013. This may be due to limitations of the acoustic survey technique in the absence of finding a roost site; DNA

⁸⁴ Songflight activity is a territorial behaviour observed within courting males. At night males patrol their territory along regular flight routes whilst emitting calls to attract females.

analysis of droppings is the most reliable way to differentiate this species from the morphologically similar Brandt's bat or the other acoustically similar *Myotis* species. Activity by serotine was confirmed within this area, records for this species were not provided within the desk study records.

- 2.4.190 Within this area both common and soprano pipistrelle species were ubiquitous with brown long-eared bat and *Myotis* species recorded at most survey locations. Noctule bats were recorded particularly towards the south-east and their distribution appears associated with grassland sites. Daubenton's, Natterer's and Brandt's bats were identified although it is possible that further unidentified *Myotis* species such as whiskered were recorded but could not be conclusively identified through acoustic surveys. Low level of activity by Leisler's and serotine were also recorded along with occasional passes by brown long-eared bat.
- 2.4.191 The habitats within the Stoneleigh, Kenilworth and Burton Green area which were assessed for roosting, commuting and foraging bat activity have been split into the following seven areas, south to north, for the purposes of discussion:
- habitats between A445 Leicester Lane and B4113 Stoneleigh Road;
 - habitats at Stoneleigh Business Park, including the River Avon;
 - foraging and commuting habitats between B4115 Ashow Road and Kenilworth Bypass;
 - habitats south of Dalehouse Lane, adjacent to Kenilworth Golf Course;
 - habitats associated with land between Dalehouse Lane and A429 Kenilworth Road;
 - woodland habitat including Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood together with adjacent habitats including the Kenilworth Greenway; and
 - habitats within and adjacent to Little Poors Wood and Big Poors Wood, including Burton Green.
- 2.4.192 Foraging and commuting habitats between A445 Leicester Lane and Stoneleigh Road. Surveys found these habitats support moderate levels of activity by a more diverse assemblage of bat species including noctule, *Myotis* species and Leisler's bat. Low level of activity by Leisler's has been recorded during transect surveys. A low level of activity by serotine was confirmed during static surveys. One tree roost was confirmed, species unknown. In addition, a low density of trees with high and moderate potential to support roosting bats was identified associated with Hares Parlour, unnamed woodland and hedgerows.
- 2.4.193 Noctule and Leisler's bats are almost exclusively tree-dwelling species and exhibit a higher level of fidelity to particular roosting sites than many other tree-dwelling species. Daubenton's, Natterer's, Brandt's and brown long-eared bats frequently utilise tree roosts and exhibit frequent roost switching⁸⁵. These species are therefore

⁸⁵ Andrews, H.L (2012) Bat Tree Habitat Key: Chapter B1 – Tree-roosting bats – A woodland bat species literature review.

likely to utilise a higher number of different roost features throughout the year. Common and soprano pipistrelle also utilise tree roosts less exclusively but there is little information on their level of fidelity to individual trees. These bats are likely to make use of a number of suitable tree roost sites throughout the year including maternity, transitional, non-breeding and transient roosts.

- 2.4.194 Habitats at Stoneleigh Business Park, including the River Avon, were found to support a diverse assemblage of bat species. The river corridor and adjacent woodland habitats within land required for the Proposed Scheme support high levels of bat activity including common pipistrelle, soprano pipistrelle, Daubenton's, noctule, brown long-eared and calls identified as *Myotis* species. A low level of Leisler's bat activity has been recorded during static surveys. Static surveys also identified low levels of activity by serotine. Bat activity was found to be particularly associated with the corridor of the River Avon and an area of woodland between the River Avon and B4115 Ashow Road.
- 2.4.195 A maternity roost for Daubenton's and brown long-eared bats found at Stare bridge along the River Avon, within 100m of land required for the construction of the Proposed Scheme, had a peak emergence of 23 Daubenton's and 63 brown long-eared. The proximity of roost to the River Avon and areas of woodland make it likely that species may use the river and woodland crossed by the route of the Proposed Scheme for commuting and foraging. Roost sites identified have been found to be predominantly associated with buildings. Within land required for the construction of the Proposed Scheme a common pipistrelle and soprano pipistrelle maternity roost within a residential building was found with a peak emergence of 53 common pipistrelle and 24 soprano pipistrelle
- 2.4.196 In addition, four buildings within land required for the construction of the Proposed Scheme were found to support summer (non-breeding) roosts for soprano pipistrelle and brown long-eared bats with peak emergence of one or two individuals. A further five buildings within 100m of the land required for the construction of the Proposed Scheme were found to support individuals of commoner bats: brown long-eared, common pipistrelle and soprano pipistrelle, with a peak emergence of one or two individuals.
- 2.4.197 There was a low density of buildings identified with high and moderate potential to support roosting bats within the boundaries of Stoneleigh Business Park. The static, transect and building inspection surveys undertaken have identified the presence of six species which make use of building roosts regularly for transient and/or maternity use – common and soprano pipistrelle, brown long-eared bat, serotine, Natterer's and Daubenton's. These species vary in the level of fidelity they show to roost sites both within and between years but it is likely that moderate and high potential buildings may be used by one or more of these species for maternity, transitional, non-breeding or transient roosting purposes, including further buildings which are likely to be present but where access to survey was not forthcoming.
- 2.4.198 Within Stoneleigh Business Park tree roosts found to support individuals of soprano pipistrelle with a peak emergence of one, and a roost with either an individual common pipistrelle or soprano pipistrelle observed during a detailed inspection. In

addition several trees were identified with high and moderate potential to support roosting bats.

- 2.4.199 Transect surveys within habitats north of the B4114 Ashow Road found low levels of predominantly commuting activity by common and soprano pipistrelle bats associated with hedgerows. Individual calls by brown long-eared bats and *Myotis* species were confirmed.
- 2.4.200 Habitats south of Dalehouse Lane, adjacent to Kenilworth Golf Course, were found to support moderate levels of activity by more common bat species including common pipistrelle and soprano pipistrelle within the land required for construction of the Proposed Scheme. A low density of trees found with moderate potential to support roosting bats were found along hedgerows within land required for the construction of the Proposed Scheme.
- 2.4.201 Transect and static surveys within habitats associated with land between Dalehouse Lane and A429 Kenilworth Road found a diverse assemblage of bat species including common pipistrelle, soprano pipistrelle, brown long-eared, Daubenton's, noctule and *Myotis* species within the land required for construction of the Proposed Scheme. A single pass by Leisler's bat was recorded in May and August 2013 during static surveys. Three building roosts were found to support individuals of soprano pipistrelle with a peak emergence of one, and a roost with either an individual common pipistrelle or soprano pipistrelle observed during a detailed inspection.
- 2.4.202 Woodland habitat associated with Crackley Wood, Roughknowles Wood, Broadwells Wood and Black Waste Wood together with adjacent habitats including the Kenilworth Greenway. Common pipistrelle, soprano pipistrelle, brown long-eared, Daubenton's, noctule and *Myotis* species identified by activity surveys in habitats within the land required for construction of the Proposed Scheme. A small number of calls confirmed as Leisler's were recorded during static surveys. No confirmed tree roosts but a low density of trees with high or moderate potential to support tree roosts were identified predominantly associated with Crackley Wood North.
- 2.4.203 One residential building within 100m of land required for the construction of the Proposed Scheme near Crackley Lane was found to support Brandt's and common pipistrelle. The roosts were associated with the loft which was separated into three separate roof voids of which two were found to contain a single pile of droppings. The number of droppings found is indicative of a summer (non breeding) roost. One pile was confirmed as Brandt's and the second was confirmed as common pipistrelle. The potential for bats to be roosting underneath roofing felt was noted which may have concealed bats in situ and further droppings. The proximity of Crackley Wood, Roughknowles Wood to these building roosts makes it likely that these species use these woodland habitats for foraging and commute along the interlinking hedgerows. Static surveys along the Kenilworth Greenway indicate it supports a diverse assemblage of bat species including noctule and Nathusius' pipistrelle (rare in Warwickshire). The diversity and abundance of species along Kenilworth Greenway was found to be greater away from the urban areas associated with Burton Green. Some woodland areas were unable to be surveyed, including Crackley Wood, due to access restrictions and could support roosts of rarer bat species

- 2.4.204 Transect and static surveys within habitats associated with Little Poots Wood and Big Poots Wood, including Burton Green, found activity dominated by commoner bat species including common pipistrelle and soprano pipistrelle. Both species are widespread and common within Warwickshire and England. A summer (non breeding) building roosts were found at ten residential buildings outside of land required for the construction of the Proposed Scheme at Burton Green, each found to support individual or small numbers of common pipistrelle, soprano pipistrelle or brown long-eared bats.

CFA19 Coleshill Junction

Overview of bat species within this area

- 2.4.205 Bat species are listed within the Babbs Mill Local Nature Reserve (LNR) citation (species unspecified). The LNR is located 1193.96m from the Proposed Scheme and has a variety of habitats including areas of grassland, woodland and a lake. Connections between the LNR and habitats within the land required for construction of the Proposed Scheme include the corridor of the River Cole which flows through the LNR and is crossed by the route of the Proposed Scheme. None of the non-statutory sites located within 5km of the Coleshill Junction area include bats within the reasons for designation, however there are a number of sites, especially those relating to woodland and water courses, which are likely to provide suitable commuting, foraging and/or roosting habitat for bats.
- 2.4.206 Information from WBRC has identified the presence of a minimum of three species of bat: common pipistrelle, soprano pipistrelle and brown long-eared bat, within 10km of the route of the Proposed Scheme within this area. All of these species were confirmed during field surveys.
- 2.4.207 The suite of bat surveys undertaken to support the assessment confirmed low levels of activity (mainly commuting) by bat species known to occur within Warwickshire but for which records are not held by WBRC within this area including noctule, Daubenton's and Leisler's bat.
- 2.4.208 The overall character of this area is considered to limit the potential for habitats to support high densities of roosting, foraging and commuting bats. Suitable habitats for bat species that are present within land required for construction of the Proposed Scheme are relatively isolated from surrounding habitats. Barriers to dispersal include trunk roads, the M42, M6 and M42/M6 Link and urban areas including the village of Water Orton, the town of Coleshill and an area of conurbation east of Birmingham including Chelmsley Wood. Light pollution occurs within habitats adjacent to urban areas and major roads thus reducing the potential for high densities of bat activity. However, there is habitat connectivity to the wider countryside along the corridors of the River Cole and the River Tame.
- 2.4.209 The open landscape within boundaries of the M42, M6 and M42/M6 Link comprises improved, semi-improved and neutral grassland, arable fields with associated field boundaries, amenity grassland and scattered scrub. The route of the Proposed Scheme crosses six watercourses which could be used as foraging and commuting corridors by bats. Woodland is sparse within this area, but the of the Proposed Scheme crosses isolated strips of broadleaved woodland including the Belt and

Catmore and a strip of woodland along Green Lane with scattered trees which have the potential to support roosting bats in addition to foraging and commuting activity.

- 2.4.210 The route of the Proposed Scheme runs adjacent to a number of settlements which have the potential to support roosting bats within buildings, including at: Coleshill Sewage Treatment Works, Attleborough Lane on the outskirts of Water Orton, and a number of isolated farmsteads. Building complexes associated with Coleshill Hall Farm, the former Coleshill Hall Hospital which is now part of Coleshill Manor Office Campus and Gilson Hall are also present.
- 2.4.211 Buildings have been identified to be at risk of demolition within this area, including: buildings associated with Coleshill Hall Farm, Coleshill Manor Office Campus and Coleshill Sewage Treatment Works, buildings along Birmingham Road, Attleboro' Lane and the outskirts of Water Orton.
- 2.4.212 Many potential roosting locations (buildings and trees) are linked by linear features and/or continuous habitat such as gappy hedgerows and watercourses which are commonly used by commuting bats to navigate their way through the landscape between potential roosting and foraging areas.

Roosting (trees)

- 2.4.213 Initial assessments of trees were undertaken during detailed ground level assessments to confirm roosts and/or roosting potential. There are 205 trees within the land required for the construction of the Proposed Scheme within this area that were subject to an initial assessment. No confirmed roosts were identified; 26 trees were found to contain features with a high potential to support roosting bats; and 96 trees found to contain features with a moderate potential to support roosting bats.
- 2.4.214 Where access was available tree climbing was undertaken in order to carry out detailed inspections. Twenty-eight of the 205 trees within the land required for the construction of the Proposed Scheme were subject to detailed inspection. Eleven of these trees were downgraded to low or negligible potential as a consequence of the inspection.
- 2.4.215 Within 100m of land required for the construction of the Proposed Scheme a further 85 trees have been subject to initial assessment. No trees were found to support a confirmed roost during the initial assessments. Fourteen trees were found to contain features with a high potential to support roosting bats and 44 trees were found to contain features with a moderate potential to support roosting bats.
- 2.4.216 Fifteen of the 85 trees within 100m of land required for the construction of the Proposed Scheme were subject to detailed inspection. Seven of these trees were downgraded to low or negligible potential as a consequence of the inspection.
- 2.4.217 Two trees were subject to emergence survey within land required for the construction of the Proposed Scheme. No trees were subject to emergence survey within 100m of land required for the construction of the Proposed Scheme.

Summary

- 2.4.218 There were no confirmed roosts identified within the land required for the construction of the Proposed Scheme within this area. Twenty four trees were found

to have high potential to support roosting bats and 88 trees were found to have moderate potential to support roosting bats.

- 2.4.219 There were no confirmed roosts identified within 100m of land required for the construction of the Proposed Scheme. Ten trees were found to have high potential to support roosting bats and 41 trees were found to have moderate potential to support roosting bats.

Roosting (buildings and structures)

- 2.4.220 Desk based initial assessments of roosting potential within buildings were undertaken using historic records, aerial photographs and where access allowed, data from extended Phase 1 habitat surveys.
- 2.4.221 An initial assessment of 18 buildings identified to be at high risk of demolition found no confirmed roosts based on initial field survey assessments. No buildings were identified to have a high potential to support roosting bats. Eight buildings were found to contain features with a moderate potential to support roosting bats.
- 2.4.222 Sixty-four buildings and/or structures were subjected to an initial assessment within the land required for the construction of the Proposed Scheme. Three were found to support a confirmed roost, one was found to contain features with a high potential and six were found to contain features with a moderate potential to support roosting bats.
- 2.4.223 Forty-two buildings and/or structures within 100m of land required for the construction of the Proposed Scheme were subjected to initial assessments. None were found to support confirmed roosts, two were found to contain features with a high potential and six were found to contain features with a moderate potential to support roosting bats.
- 2.4.224 Detailed internal inspections were carried out at the buildings and/or structures where access was available.
- 2.4.225 Nine buildings and/or structures identified to be at high risk of demolition were subject to a detailed inspection. No high or moderate potential buildings were downgraded to low potential or scoped out following detailed inspection.
- 2.4.226 Thirty eight buildings and/or structures within land required for the construction of the Proposed Scheme but not identified to be at high risk of demolition were subject to detailed inspection. No high or moderate potential buildings were downgraded to low potential or scoped out following detailed inspection.
- 2.4.227 Twenty-four buildings and/or structures within 100m of land required for the construction of the Proposed Scheme were subject to detailed inspection. No high or moderate potential buildings were downgraded to low potential or scoped out following detailed inspection

Emergence Surveys

- 2.4.228 Where access was available emergence surveys were carried out at those buildings and/or structures that were identified to have high to moderate potential for roosting bats.

- 2.4.229 Four buildings and/or structures identified to be at high risk of demolition, six buildings and/or structures within the land required for the construction of the Proposed Scheme and four buildings and/or structures within 100m of land required for the construction of the Proposed Scheme were subject to emergence survey.

Summary

- 2.4.230 Following the full suite of surveys the results have identified one confirmed roost in a building with potential for demolition; five confirmed roosts in buildings and/or structure within land required for the construction of the Proposed Scheme and one confirmed roost in buildings within 100m of land required for the construction of the Proposed Scheme.
- 2.4.231 No buildings identified to be at high risk of demolition have high potential to support roosting bats. Seven of the buildings and/or structures were found to have moderate potential to support roosting bats.
- 2.4.232 No buildings and/or structures within land required for the construction of the Proposed Scheme but are not identified to be at high risk of demolition were found to have high potential to support roosting bats. Five of the buildings and/or structures were found to have moderate potential to support roosting bats.
- 2.4.233 One of the buildings and/or structures within 100m of land required for the construction of the Proposed Scheme was found to have high potential to support roosting bats. Six of the buildings and/or structures were found to have moderate potential to support roosting bats.
- 2.4.234 Details of confirmed building roosts in this area of the route are provided in Table 75.

Table 75: Confirmed bat roosts in buildings/structures in CFA19

Ecology survey code	Location	OS grid reference	Building/ structure type	Species confirmed utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ⁸⁶	Roost description	Distance from the land required for construction of the Proposed Scheme ⁸⁷ (m)
030-BS1-162010	Coleshill Manor Office Campus	SP 18530 89318	Other: Manor house (commercial)	Brown long-eared (5)	25 March 2013 Inspection – brown long-eared bat identified from DNA analysis of droppings 22 July 2013 Emergence	M, T, D	Occasional gaps along wooden eaves present provide access points into roost contained within the roof void. Numerous lifted and missing tiles.	Within land required
030-BS1-163001	Property north of Gilson Hall	SP 19143 89990	Other: Shed	<i>Pipistrellus</i> sp. (unknown)	16 August 2012 Inspection survey only – less than five droppings identified below ridge beam	T, D	Single storey brick built shed, roost located underneath loose tiles adjacent to ridge beam	Within land required
030-BS1-163002	Property north of Gilson Hall	SP 19146 89996	Other: Garage	Brown long-eared (unknown)	16 August 2012 Initial inspection identified small number (approximately 30) brown long-eared droppings (species confirmed through DNA analysis)	T, D	Droppings identified beneath ridge board within enclosed roof void (false ceiling)	Within land required
030-BS1-163019	Property north of Gilson Hall	SP 18871 90235	Residential	Common pipistrelle (3)	24 July 2013 Emergence	T, D	Gaps between ridge tiles and underneath loose roof tiles	Within land required
030-BS1-163033	Property at Water Orton	SP 17443 90426	Residential	Common pipistrelle (1)	12 June 2013 Emergence	T, D	Emerged from hanging tiles on dormer window.	Within land required
030-BS1-163042	Property north of Gilson Hall	SP 18979 90327	Residential	Common pipistrelle (1), soprano pipistrelle (1)	18 July 2013 Emergence	T	South-west corner of the house, under soffit	Within land required

⁸⁶ Roost types for which feature is considered suitable are as follows: T = Transitional roost; M = Maternity roost; S = Satellite roost; H = Hibernation roost; D = Day roost; F = Feeding roost; MAT = Mating roost, N = Night roost. Definitions as provided in Hundt L (2012), *Bat Surveys: Good Practice Guidelines 2nd edition*, Bat Conservation Trust.

⁸⁷ Hereafter the term 'land required' is used as a shortened version of the full term 'land required for the construction of the Proposed Scheme'.

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Ecology survey code	Location	OS grid reference	Building/ structure type	Species confirmed utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ⁸⁶	Roost description	Distance from the land required for construction of the Proposed Scheme ⁸⁷ (m)
030-BS1-163062	Property north of Gilson Hall	SP 18784 90204	Barn	Common pipistrelle (unknown – species confirmed through DNA)	05 June 2013 Initial inspection (small number of droppings)	T, D	Droppings noted beneath ridge beam. Roosting opportunities within timber frame mortise joints	Within land required

Bat activity surveys

- 2.4.235 Ten transect routes have been surveyed within the Coleshill Junction area as shown in Table 76:
- the two southern transects comprised habitats associated with the corridor of the River Cole, including floodplain habitat, located between the route of the M6 and M42. These included an assessment of arable habitats associated with Coleshill Farm;
 - one transect assessed bat activity within the land associated with Coleshill Manor Office Campus. The habitats included an isolated area of woodland (The Belt) and an office complex containing amenity and semi improved grassland;
 - two transects assessed bat activity within land at and near Water Orton. Habitats present included water bodies and grassland habitat were located south of Water Orton which included an area with a network of drains and water bodies;
 - two transect routes encompassed habitats within the boundaries of Coleshill Sewage Treatment works; and
 - two transects were carried out within habitats north of Gilson Hall which assessed activity within large fields of improved grassland and areas of amenity grassland bound by gappy managed hedgerows with occasional standards trees. The most northern transect encompassed habitats between Watton Lane and the Birmingham to Nuneaton Line, dominated by areas of semi improved grassland.
- 2.4.236 The following bat species have been recorded during the range of bat activity surveys conducted in support of the scheme in this area: noctule, common pipistrelle, soprano pipistrelle; Leisler's bat, brown long-eared; and Daubenton's bat. Some calls recorded could not be identified to species level and *Myotis* species and *Nyctalus* species were also recorded.

Table 76: Bat activity surveys conducted within CFA19

Ecology survey code	Transect Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA1-161001	Habitats along the River Cole	7	25 April 2013	14 June 2013	EC-06-109, H6
030-BA1-162002	Habitats along the River Cole	13	08 August 2012	13 June 2013	EC-06-110, G6
030-BA1-162001	Land at Coleshill Manor Office Campus	9	17 April 2013	13 August 2013	EC-06-110, G7
030-BA1-163001	Land at and near Water Orton	10	29 August 2012	04 July 2013	EC-06-134, H3
030-BA1-163002	Land at and near Water Orton	9	23 April 2013	14 August 2013	EC-06-134, G7
030-BA1-164002	Coleshill Sewage Treatment Works	11	17 September 2012	06 August 2013	EC-06-111, D5

Ecology survey code	Transect Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA1-164003	Coleshill Sewage Treatment Works	10	17 September 2012	06 August 2013	EC-06-111, C3
030-BA1-164001	Land north of Gilson Hall	10	15 August 2012	21 May 2013	EC-06-111, E6
030-BA1-163003	Land north of Gilson Hall	11	15 August 2012	24 July 2013	EC-06-111, H3

Table 77: Bat activity transect survey results – transect 030-BA1-161001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-161001	Habitats along the River Cole				Grassland adjacent to river; arable land to north.																
Visit number and date	Weather conditions				Total species passes during transect survey ⁸⁸																
	Temp (°C)	Cloud (0-8) ⁸⁹	Rain (0-5) ⁹⁰	Wind (0-12) ⁹¹	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: Dusk 25 April 2013	10	8	1	3/4	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dawn 26 April 2013	7	4	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dusk 23 May 2013	8	4	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dawn 24 May 2013	6	8	0-2	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: 25 May 2013	8	3	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: Dusk 13 June 2013	14	6/8	0	3/4	16	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 7: Dawn 14 June 2013	9	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

⁸⁸ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp. – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

⁸⁹ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

⁹⁰ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

⁹¹ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.

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Table 78: Bat activity transect survey results – transect 030-BA1-162002

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-162002	Habitats along the River Cole				Improved grassland surrounded by hedgerow, with ditch running through; river to south.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: Dusk 08 August 2012	20	3	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 2: Dusk 29 August 2012	14	2	0	3	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dawn 30 August 2012	15	7	0/2	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dusk 22 April 2013	9	4	0	4	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dawn 23 April 2013	9	4	0	4	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Visit 6: Dusk 16 May 2013	11	8	2	1	11	2	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
Visit 7: Dawn 17 May 2013	11	8	2	1	3	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
Visit 8: Dusk 18 June 2013	19	8	0	1	14	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 9: Dawn 19 June 2013	19	8	0	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 10: Dawn 16 July 2013	25	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 11: Dawn 17 July 2013	16	1	0	1	8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 12: Dawn 09 August 2013	16	8	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 13: Dusk 13 August 2013	17	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 79: Bat activity transect survey results – transect

Ecology survey code	Transect location				Description of habitats covered by transect																	
030-BA1-162001	Land at Coleshill Manor Office Campus				Arable land bordered by woodland to the north and major road to the east. Some areas of grassland to the west; central buildings.																	
Visit number and date	Weather conditions				Total species passes during transect survey																	
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es	
Visit 1: Dusk 17 April 2013	10	3	0	7	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 2: Dusk 22 April 2013	8	2	0	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 3: Dawn 23 April 2013	12	2	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 4: Dusk 15 May 2013	9	2	0	1	6	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
Visit 5: Dawn 16 May 2013	9	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 6: Dusk 19 June 2013	16	4	0	1	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 7: Dawn 20 June 2013	16	4	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
Visit 8: Dusk 15 July 2013	22.9	2	0	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 9: Dawn 16 July 2013	16	2	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 10: Dusk 08 August 2103	20	6	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 11: Dawn 13 August 2103	11	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

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Table 80: Bat activity transect survey results – transect

Ecology survey code	Transect location				Description of habitats covered by transect																	
030-BA1-163001	Land at and near Water Orton				Arable land surrounded by hedgerow, two ponds one to south, one to west. Strip of rough semi-improved grassland, scrub, young trees between fields.																	
Visit number and date	Weather conditions				Total species passes during transect survey																	
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es	
Visit 1: Dusk 29 August 2012	14	0	0	2	5	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 2: Dawn 30 August 2012	14	1/8	0/3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 3: Dusk 10 September 2012	17.5	6	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
Visit 4: Dawn 09 October 2012	8	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 5: Dusk 23 April 2013	14	2	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 6: Dusk 21 May 2013	14	6	0	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 7: Dawn 22 May 2013	8	3	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 8: Dawn 10 June 2013	14	1	0	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 9: Dusk 11 June 2013	10	1	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 10: Dusk 04 July 2013	16	0	0	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Table 81: Bat activity transect survey results – transect

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-163002	Land at and near Water Orton				Arable land with occasional trees around field margins.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/ Es
Visit 1: Dusk 23 April 2013	11	1	0	1	4	1	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
Visit 2: Dawn 24 April 2013	11	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dusk 28 May 2013	10	6	0	1	8	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dusk 19 June 2013	18	3	0	1	7	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
Visit 5: Dawn 20 June 2013	18	3	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Visit 6: Dusk 17 July 2013	24	1	0	1	2	1	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0
Visit 7: Dawn 18 July 2013	17	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Visit 8: Dusk 12 August 2013	14	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 9: Dawn 14 August 2013	12	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Table 82: Bat activity transect survey results – transect 030-BA1-164002

Ecology survey code	Transect location				Description of habitats covered by transect																	
030-BA1-164002	Coleshill Sewage Treatment Works				Industrial buildings and sewage treatment, adjacent to river; cottages to south of site; area of semi-improved grassland with planted trees.																	
Visit number and date	Weather conditions				Total species passes during transect survey																	
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es	
Visit 1: Dusk 17 September 2012	19.1	8	0-2	2	12	7	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	
Visit 2: Dawn 18 September 2012	10.2	1	0	2	1	0	0	4	0	0	0	0	0	0	2	0	0	0	0	0	0	
Visit 3: Dusk 08 October 2012	12.2	8	0	0	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 4: Dawn 25 October 2012	10.5	8	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 5: Dusk 29 April 2013	10	6	1	1	17	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 6: Dusk 21 May 2013	10	7	0	2	11	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
Visit 7: Dawn 22 May 2013	5	7	0	1	9	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	
Visit 8: 23 July 2013	15	7	0	0	8	4	0	0	0	0	0	0	0	0	6	0	0	5	5	5	0	
Visit 9: 24 July 2013	15	4	0	0	15	8	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
Visit 10: 05 August 2013	14	1	0	3	24	24	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
Visit 11: 06 August 2013	13	1	0	1	11	9	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	

Table 83: Bat activity transect survey results – transect

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-164003	Coleshill Sewage Treatment Works				Industrial buildings and sewage treatment adjacent to river.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: Dusk 17 September 2012	14.7	7	0	4	7	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dawn 18 September 2012	9.4-8.9	2	0	2	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dusk 08 October 2012	10.1-8.7	8	0	1	6	12	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 4: Dusk 30 April 2013	8	2	0	2	11	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dusk 23 April 2013	3	6	0	3	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 6: Dawn 24 April 2013	3	7	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: 22 July 2013	21	6	0	2	15	6	0	0	0	0	0	0	0	0	5	0	0	2	1	1	0
Visit 8: 23 July 2013	18	2	3	1	13	8	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 9: 05 August 2013	9	1	0	2	25	6	0	0	0	0	0	0	0	0	3	0	0	0	0	0	2
Visit 10: 06 August 2013	6	1	0	2	6	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0

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Table 84: Bat activity transect survey results – transect 030-BA1-164001

Ecology survey code	Transect location				Description of habitats covered by transect																	
030-BA1-164001	Land north of Gilson Hall				Small area of grassland with hedgerows; with major road to west, industrial buildings to north, amenity grassland to south and woodland to east.																	
Visit number and date	Weather conditions				Total species passes during transect survey																	
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es	
Visit 1: Dusk 15 August 2012	16.9-14.8	6	0	7-5	11	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 2: Dawn 16 August 2012	14.5-13.9	0-8	0-2	1-8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 3: Dusk 10 September 2012	14	7	0	2-5	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
Visit 4: Dusk 26 September 2012	18	7	0	3	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 5: Dawn 27 September 2012	8	6	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 6: Dusk 17 October 2012	11.1	4	0	5	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 7: Dawn 18 October 2012	9.5	2	0	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 8: Dusk 30 April 2013	9	0	0	2	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
Visit 9: 20 May 2013	13	3	0	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 10: 21 May 2013	9	7	1	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Table 85: Bat activity transect survey results – transect 030-BA1-163003

Ecology survey code	Transect location				Description of habitats covered by transect																	
030-BA1-163003	Land north of Gilson Hall				Amenity grassland – playing fields, with pavilion building. Scattered trees to north, and broadleaved planted woodland around northern fringe. Line of mature trees along southern boundary.																	
Visit number and date	Weather conditions				Total species passes during transect survey																	
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es	
Visit 1: Dusk 15 August 2012	16.9/14.8	8-4	0	7-5	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 2: Dawn 16 August 2012	14.5/13.9	0-8	0-2	1-8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 3: Dusk 10 September 2012	15	8	0	4	6	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	
Visit 4: Dusk 26 September 2012	10.7/9.5	7	2	2	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 5: Dawn 27 September 2012	10.5/8.3	7-5		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 6: Dusk 17 October 2012	12.3/10.5	2	0	3-4	12	6	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 7: Dawn 18 October 2012	10.2/8.8	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 8: Dusk 22 May 2013	5	2	0	4	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 9: Dawn 23 May 2013	3	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 10: 23 July 2013	19	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 11: 24 July 2013	15	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Static detectors

- 2.4.237 A total of thirteen static surveys have been completed within this area as shown in Table 86. The dominant species recorded are common and soprano pipistrelle as would be expected due to both species being widely distributed and common within Warwickshire and the UK. A broad range of habitats was encompassed by the static surveys and were predominantly associated with each of the transect survey routes. The static surveys were positioned as follows:
- 2.4.238 Six statics were positioned alongside habitats associated with the corridor of the River Cole, including floodplain habitat, and land associated with Coleshill Manor Office Campus. Potential key linear features that were surveyed include the corridor of the River Cole, an unnamed tributary watercourse of the River Cole, The Belt and a strip of woodland along Green Lane, and along the boundaries of the B4114 Birmingham Road:
- two statics were located within arable land south of Water Orton;
 - one static was located within arable land near Water Orton to the south at Attleboro' Farm;
 - one static survey encompassed habitats within the boundaries of Coleshill Sewage Treatment works; and
 - two statics were carried out within habitats north of Gilson Hall.
- 2.4.239 The results of the static surveys are provided in Table 86.

Table 86: Static surveys conducted within CFA19

Ecology survey code	Static Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA2-160001	Habitats along the River Cole	2	25 July 2013	09 August 2013	EC-06-108b, A5
030-BA2-161001	Habitats along the River Cole	2	22 July 2013	09 August 2013	EC-06-109, E5
030-BA2-162001	Habitats along the River Cole	4	23 August 2012	09 July 2012	EC-06-110, G4
030-BA2-162002	Habitats along the River Cole	6	23 August 2012	16 July 2013	EC-06-110, E6
030-BA2-162003	Coleshill Manor Office Campus	4	23 April 2013	26 July 2013	EC-06-109, A6
030-BA2-162004	Coleshill Manor Office Campus	4	23 April 2013	26 July 2013	EC-06-110, F10
030-BA2-163001	Land at or near Water Orton, Vicarage Lane	4	10 September 2012	25 June 2013	EC-06-134, H4
030-BA2-163002	Land at or near Water Orton, Vicarage Lane	3	10 September 2012	25 May 2013	EC-06-110, A10
030-BA2-163003	Land north of Gilson Hall	5	18 April 2013	09 August 2013	EC-06-111, G4
030-BA2-163004	Land north of Gilson Hall	3	18 June 2013	13 August 2013	EC-06-110, C8
030-BA2-164001	Coleshill Sewage Treatment Works	8	16 August 2012	12 August 2013	EC-06-111, D4

Table 87: Summary of static detector monitoring results for 030-BA2-1600001

Ecology survey code	Location	OS Grid				Description of habitat												
030-BA2-160001	Habitats along the River Cole	SP 19163 87794				Mature hawthorn tree located on the southern boundary of a large hedgerow adjacent to a wheat field.												
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ⁹² (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
02 August 2013 – 09 August 2013	7	14	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 88: Summary of static detector monitoring results for 030-BA2-161001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-161001	Property along the River Cole	SP 19203 88328	Single cherry tree in introduced shrub at road end of front garden.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
22 July 2013 – 30 July 2013	8	40	15	0	0	0	0	0	0	0	0	2	0	0	2	1	0	1
02 August 2013 – 09 August 2013	7	46	4	0	0	0	0	0	0	0	0	0	1	0	2	0	0	1

⁹² Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 89: Summary of static detector monitoring results for 030-BA2-162001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-162001	Habitats along the River Cole	SP 19276 89526	Within willow tree line, facing river and semi-improved pasture fields.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
23 August 2012 – 30 August 2012	7	1234	127	0	128	0	1	0	0	0	0	238	0	0	10	4	0	23
24 April 2013 – 02 May 2013	8	1184	108	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0
14 May 2013 – 21 May 2013	7	514	419	0	0	0	0	0	0	0	0	8	0	0	1	1	0	0
02 July 2013 – 09 July 2013	7	51	3	0	0	0	0	0	0	0	0	3	0	0	2	4	0	0

Table 90: Summary of static detector monitoring results for 030-BA2-162002

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-162002	Habitats along the River Cole	SP 19074 89771	Scattered hawthorn tree line with a surrounding poor semi improved grassland. Scattered tree line joins broad leaved tree line with semi mature and scattered mature trees.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
23 August 2012 – 30 August 2012	7	1234	127	0	128	0	0	0	0	0	0	238	0	0	10	4	0	23
24 April 2013 – 02 May 2013	8	181	69	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
01 May 2013 – 06 May 2013	5	347	164	0	0	0	0	0	0	0	0	429	0	1	4	3	0	0
14 May 2013 – 21 May 2013	7	747	570	0	0	0	0	0	0	0	0	53	0	0	0	0	0	0
11 June 2013 – 18 June 2013	7	482	56	0	0	0	0	0	0	0	0	2	0	0	1	2	0	2
09 July 2013 – 16 July 2013	7	17	2	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0

Table g1: Summary of static detector monitoring results for 030-BA2-162003

Ecology survey code	Location	OS Grid		Description of habitat														
030-BA2-162003	Coleshill Manor Office Campus	SP 18945 88978		Woodland edge/arable field.														
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
23 April 2013 – 30 April 2013	7	1414	19	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
16 May 2013 – 23 May 2013	7	29	5	0	0	0	0	0	0	0	0	0	0	0	2	4	0	0
19 June 2013 – 29 June 2013	10	108	22	0	0	0	0	0	0	0	0	1	1	0	4	2	0	1
24 July 2013 – 26 July 2013	2	64	3	0	0	0	0	0	0	0	0	1	0	0	4	0	0	0

Table g2: Summary of static detector monitoring results for 030-BA2-162004

Ecology survey code	Location	OS Grid				Description of habitat													
030-BA2-162004	Coleshill Manor Office Campus	SP 18524 89670				Tree line/arable field.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep	
23 April 2013 – 30 April 2013	7	5	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16 May 2013 – 23 May 2013	7	198	24	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	
19 June 2013 – 28 June 2013	9	118	43	0	0	0	0	0	0	0	0	1	1	0	2	1	0	1	
24 July 2013 – 26 July 2013	2	53	5	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	

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Table 93: Summary of static detector monitoring results for 030-BA2-163001

Ecology survey code	Location	OS Grid				Description of habitat												
030-BA2-163001	Land at or near Water Orton, Vicarage Lane	SP1810290476				Overlooking tussocky pasture from hedgerow.												
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
10 September 2012 – 17 September 2012	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08 October 2012 – 12 October 2012	4	44	13	0	0	0	0	0	0	0	0	3	0	0	8	2	0	0
21 May 2013 – 28 May 2013	7	23	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 June 2013 – 25 June 2013	7	91	8	0	0	0	0	0	0	0	0	7	0	0	3	1	0	0

Table 94: Summary of static detector monitoring results for 030-BA2-163002

Ecology survey code	Location	OS Grid			Description of habitat													
030-BA2-163002	Land at or near Water Orton, Vicarage Lane	SP 18486 90570			Overlooking arable margin from hedgerow beside pond.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
10 September 2012 – 17 September 2012	7	1342	913	0	15	0	0	0	0	0	0	485	0	0	6	2	0	0
08 October 2012 – 12 October 2012	4	870	49	0	5	0	0	0	0	0	0	3	0	0	0	0	0	0
21 May 2013 – 25 May 2013	4	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 95: Summary of static detector monitoring results for 030-BA2-163003

Ecology survey code	Location	OS Grid				Description of habitat													
030-BA2-163003	Land north of Gilson Hall	SP 19029 90757				Improved grassland, hedge, mature tree													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep	
18 April 2013 – 25 April 2013	7	343	29	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	
15 May 2013 – 22 May 2013	7	1891	110	1	0	0	0	0	0	0	0	5	0	0	2	1	0	0	
30 May 2013 – 08 June 2013	9	1147	27	0	0	0	0	0	0	0	0	8	0	0	1	2	0	0	
04 July 2013 – 11 July 2013	7	330	29	0	0	0	0	0	0	0	0	0	0	0	4	9	0	0	
01 August 2013 – 09 August 2013	8	488	81	0	0	0	0	0	0	0	0	3	0	0	1	7	0	0	

Table 96: Summary of static detector monitoring results for 030-BA2-163004

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-163004	Land north of Gilson Hall	SP 18839 90298	Mown amenity grassland garden behind static. Static facing semi-improved grassland (mown) and pond.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
18 June 2013 – 25 June 2013	7	393	33	0	0	0	0	0	0	0	0	1	0	0	2	1	0	0
06 August 2013 – 13 August 2013	7	58	8	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0

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Table 97: Summary of static detector monitoring results for 030-BA2-164001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-164001	Coleshill Sewage Treatment Works	SP 19106 91417	Located in a beech tree in area of scattered woodland just off well walked path.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
16 August 2012 – 24 August 2012	8	33	18	0	0	0	0	0	0	0	0	3	0	0	9	0	0	0
07 September 2012 – 13 September 2012	6	5	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 October – 22 October 2012	6	47	24	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0
24 April 2013 – 01 May 2013	7	5471	396	1	0	0	0	0	0	0	0	9	0	0	1	0	0	0
22 July 2013 – 30 July 2013	8	73	25	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
05 August 2013 – 12 August 2013	7	779	131	1	0	0	0	0	0	0	0	6	2	0	3	1	0	0

Discussion

- 2.4.240 Building roosts identified support summer (non-breeding) transient roosts of commoner bat species (common pipistrelle and brown long-eared bat) which are widespread within the UK and Warwickshire. Four buildings roosts were confirmed within Gilson. One brown long-eared maternity roost was found at Coleshill Manor office campus. No significant large hibernation or swarming roosts) have been identified within those areas accessible. None of the building roosts identified are at high risk of demolition although four building roosts that surround Gilson lie within the land required for construction of the Proposed Scheme.
- 2.4.241 Desk study records identified three known maternity roosts: one common pipistrelle, one *Pipistrellus* species, and one unidentified species. In addition there is one potential roost for *Pipistrellus* species, status currently unknown. Of these, none are located within 100m of the land required for the construction of the Proposed Scheme.
- 2.4.242 A number of buildings have been identified with high and moderate potential to support bats within land required for the construction of the Proposed Scheme. The bat surveys undertaken have identified the presence of four species within the area which make use of buildings roosts regularly for transient and/or maternity use including common and soprano pipistrelle, brown long-eared bat and Daubenton's. These species vary in the level of fidelity they show to roost sites both within and between years but it is likely that moderate and high potential buildings may be used by one or more of these species for maternity, transitional, non-breeding or transient roosting purposes, including buildings to which there was no access for survey.
- 2.4.243 Seven species (with the potential for the presence of further species within the *Myotis* genus) were identified from a number of transects and statics located within suitable habitat within this area. This assemblage is less diverse than within other areas within areas CFA16 to CFA22 inclusive. This is likely to be a function of the habitats present, the level of habitat severance created by existing transport infrastructure and the light pollution created by the transport network and urban development.
- 2.4.244 No tree roosts were identified in this area. Trees with high potential to support roosting bats have been identified both within land required for construction of the Proposed Scheme and 100m buffer. Activity surveys within the area have confirmed the presence of six species of bat which utilise tree roosts for transient and/or maternity use therefore there remains the potential for these trees to be used a roost site.
- 2.4.245 Noctule and Leisler's bats (confirmed within the area) are almost exclusively tree-dwelling species and exhibit a higher level of fidelity to particular roosting sites than many other tree-dwelling species. Daubenton's and brown long-eared bats frequently utilise tree roosts and exhibit frequent roost switching⁹³. These species are therefore likely to utilise a higher number of different roost features throughout the year. Common and soprano pipistrelle also utilise tree roosts less exclusively but there is little information on their level of fidelity to individual trees. These bats are likely to

⁹³ Andrews, H.L (2012) Bat Tree Habitat Key: Chapter B1 – Tree-roosting bats – A woodland bat species literature review.

make use of a number of suitable tree roost sites throughout the year including maternity, transitional, non-breeding and transient roosts.

- 2.4.246 Overall the habitats within this area, predominantly arable and pasture fields with occasional hedgerows and trees, were found to support low to moderate levels of commuting/foraging activity by commoner bat species (common pipistrelle and soprano pipistrelle). The static and transect surveys identified common and soprano pipistrelle as the most abundant species within the area as would be expected due to both species being widely distributed and common within Warwickshire and the UK. Brown long-eared bats were infrequently recorded although the constraints of the acoustic survey methodology, coupled with the call characteristics of the species suggest that they are likely to be under-recorded.
- 2.4.247 The assemblage of species recorded is consistent with the desk study records. A total of four species were identified in desk study records as present within 10km of the proposed route within this area and, as well as confirming the presence of these, an additional two species; Daubenton's and noctule, have been identified during the field surveys conducted in 2012/2013.
- 2.4.248 The habitats within Coleshill Junction area which were found to support a concentration of commuting/foraging bat activity and a more diverse assemblage of bat species have been split into the following five areas, south to north, for the purposes of discussion:
- foraging and commuting habitats along and surrounding the River Cole, including floodplain grassland along the banks of the River Cole;
 - foraging and commuting habitats in areas of woodland within Coleshill Sewage Treatment Works and along the adjacent River Tame;
 - roosting, foraging and commuting habitats at and near Water Orton;
 - roosting, foraging and commuting habitats around Coleshill Manor Office Campus; and
 - roosting, foraging and commuting habitats north of Gilson Hall.
- 2.4.249 The River Cole and its adjacent corridor of grassland habitats have been found to support a concentration of commuting and foraging bats, although no roosts were identified. The assemblage is dominated by the two common species: common and soprano pipistrelle, with occasional passes by Leisler's, noctule and *Myotis* species. This concentration of bat activity continues where the river corridor flows east of the M6 and through habitats south of Gilson. A low level of activity by Leisler's bat was also identified during static surveys although no roost sites for this species have been found. Leisler's are a rare species within Warwickshire.
- 2.4.250 A more diverse assemblage of bats was associated with areas of woodland within Coleshill Sewage Treatment Works and along the River Tame. The assemblage is dominated by common and soprano pipistrelle with occasional brown long-eared bat recorded. There were also recordings of rarer bats including noctule and *Myotis* species which indicates that the area is being used as foraging habitat. A single pass of

a *Nathusius' pipistrelle* indicates passage over the habitats rather than core foraging or commuting.

- 2.4.251 Habitats such as water bodies and grassland at and near Water Orton were found to support low levels of activity by a more diverse assemblage of bat including Leisler's bat (commuting only) recorded during static surveys. Other species recorded included common pipistrelle, soprano pipistrelle and rarer bats including noctule and *Myotis* species. Here habitats include a collection of water bodies which provide suitable foraging habitat for bats linked by managed hedgerows.
- 2.4.252 A potential small maternity roost or small non-breeding summer roost of brown long-eared bats was identified at a building within the Coleshill Manor Office Campus during emergence counts. The woodland, scrub, hedgerow and grassland habitats at the Coleshill Manor Office Campus was found to support common and soprano pipistrelle, a small number of brown long-eared bat, Leisler's, noctule and *Myotis* species. The static surveys carried out at this location recorded a low level of Leisler's activity.
- 2.4.253 The scrub, hedgerows and grassland habitats located north of Gilson Hall support common and soprano pipistrelle, and a small number of brown long-eared bat. Species were also recorded include Leisler's and noctule. A small number of *Myotis* species passes are likely to represent irregular commuting or opportunistic foraging rather than core foraging activity.
- 2.4.254 *Nathusius' pipistrelle* was recorded through a very small number of calls within this area. The low number of calls is indicative of passage or transient use rather than core foraging or commuting habitat. It is not possible to assess the status of the *Myotis* species and *Nyctalus* species within this area as bats of this genus could not be identified to species level.

CFA20 Curdworth and Middleton

Overview of bat species status in this area

- 2.4.255 None of the designated sites within 10km have bats listed as features within their citations.
- 2.4.256 Within the southern end of this area, south of Curdworth, the habitats within the land required for the construction of the Proposed Scheme are dominated by Coleshill Distribution Centre. This urban area and major trunk roads (M6 Toll and M42) increase light pollution and fragmentation across the landscape thus reducing the potential for habitats within the land required for the construction of the Proposed Scheme to support high densities of bat activity. To the west of Curdworth the habitats within the land required for the construction of the Proposed Scheme become more rural but are fragmented to the north and west where the M6 Toll and M42 converge. Field boundaries retain connectivity between habitats within the land required for the Proposed Scheme and suitable foraging habitats associated with the River Tame and a series of water bodies associated with Kingsbury Water Park approximately 1.5km outside of the land required for the Proposed Scheme to the east.
- 2.4.257 To the north of Curdworth the landscape is open and predominantly arable with minimal light pollution. Habitat features with the potential to support higher densities of bat activity include the River Tame (and its tributaries), the Birmingham and Fazeley Canal and Langley Brook. The large water bodies at Cuttle Mill Fishery approximately 5m outside of the land required for the construction of the Proposed Scheme also have potential to provide foraging habitat for bats. Field hedgerow boundaries create habitat links between habitats within land required for the construction of the Proposed Scheme and suitable foraging habitat at large water bodies associated with Middleton Pool SSSI and the Belfry Golf Course that lies to the east and west of the land required for the construction of the Proposed Scheme. Areas of woodland include Hams Hall Woodland LWS which comprises three smaller woodlands (Hams Lane Wood, Sych Wood, Church Pool Covert); and Mill Plantation and Lower Mill Plantation at Cuttle Mill Fishery which could potentially support roosts and foraging habitats for bats. The Proposed Scheme passes through North Wood; although no access was gained to undertake surveys it is likely that this woodland provides habitat roosting, commuting and foraging resources for bats.
- 2.4.258 Within the Proposed Scheme there are primarily isolated dwellings and farmsteads resulting in a low density of building roost opportunities for bats. The route of the Proposed Scheme will pass to the east of the small settlement of Hunts Green and Middleton village. No building roosts have been identified through surveys within Hunts Green and Middleton as there was limited access to buildings for survey, or through desk study records. However, it is likely that some buildings would provide roosting habitat for bat species. Middleton is surrounded by large arable fields which contain features such as hedgerows, commonly used by commuting bats to navigate their way through the landscape between potential roosting and foraging areas. The route of the Proposed Scheme crosses Langley brook which has the potential to provide a commuting and foraging corridor through the landscape linking Middleton Pool SSSI, Middleton Pool Local Nature Reserve (LNR) and Mill Pool Plantation to potential roost sites within Middleton.

- 2.4.259 Information from WBRC identified the presence of a minimum of eight species of bat within 10km of the route of the Proposed Scheme within this area, five of which were confirmed during surveys: common pipistrelle, soprano pipistrelle, brown long-eared bat, noctule, and Daubenton's. Natterer's and Leisler's bats were also recorded during surveys but have not been previously identified by the WBRC within 10km of the route of the Proposed Scheme within this area.
- 2.4.260 A review has been undertaken of committed developments within 1km of the land required for construction of the Proposed Scheme and in particular those developments that could have an impact on bat species and habitats likely to be used for roosting, foraging and commuting activity. Of these, one development considered the impact on bat species and had records of bats available: PAP/2011/0055 Change of use from domestic and commercial fishery use of building at Cuttle Mill Fishery to class B1 offices and of building 3 to storage associated with the fishery and associated with light industrial use of building 2. This development is located within 100m of the land required for the construction of the Proposed Scheme. Bat surveys confirmed two buildings with summer non-breeding roosts for common pipistrelle and brown long-eared bats. Evidence included one brown long-eared bat found and evidence of droppings.

Roosting (trees)

- 2.4.261 Initial assessments of trees were undertaken during detailed ground level assessments to confirm roosts and/or roosting potential. There are 110 trees, within the land required for the construction of the Proposed Scheme within this area, that were subject to an initial assessment. From the results of the initial assessments no confirmed roosts were identified. Three trees were found to contain features with high potential to support roosting bats and 46 trees were found to contain features with moderate potential to support roosting bats.
- 2.4.262 Where access was available tree climbing was undertaken in order to carry out detailed inspections. Nineteen of the 110 trees within the land required for the construction of the Proposed Scheme were subject to detailed inspection. Seven of these trees were downgraded to low or negligible potential as a consequence of the inspection.
- 2.4.263 Between the land required for the construction for the Proposed Scheme and 100m, 211 trees were subject to initial assessment. One tree was found to have a confirmed roost during the initial assessments. Ten trees were found to contain features with high potential to support roosting bats and 108 trees were found to contain features with moderate potential to support roosting bats.
- 2.4.264 Twenty-four of the 211 trees within 100m of land required for the construction of the Proposed Scheme were subject to detailed inspection. Eleven these trees were downgraded to low or negligible potential as a consequence of the inspection.
- 2.4.265 Where access was available emergence surveys were undertaken. No trees were subject to emergence survey within land required for the construction of the Proposed Scheme. Two trees were subject to emergence survey within 100m of land required for the construction of the Proposed Scheme.

Summary

- 2.4.266 Details of confirmed tree roosts in this area are provided in Table 98.
- 2.4.267 There was one confirmed tree roost found within the land required for the construction of the Proposed Scheme within this area. In addition, two trees were found to have high potential to support roosting bats and 39 trees were found to have moderate potential to support roosting bats.
- 2.4.268 Between the land required for the construction of the Proposed Scheme and 100m one confirmed roost was found. In addition, seven trees were found to have high potential to support roosting bats and 100 trees were found to have moderate potential to support roosting bats.

Table 98: Confirmed tree roosts within CFA20

Ecology survey code	Location	OS grid reference	Tree species	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ⁹⁴	Roost description	Distance from the land required for construction of the Proposed Scheme ⁹⁵ (m)
030-BT1-165068	Woodland adjacent to Hams Lane	SP 19587 92497	Oak	Soprano pipistrelle (1)	13 May 2013 Detailed inspection	T, D	A 20-25cm crack with an opening at the end of a branch overhanging the road.	25m
030-BT1-165070	Woodland adjacent to Hams Lane	SP 19625 92446	Oak	Unknown (unknown)	13 May 2013 Detailed inspection – Droppings only	T, D, S	Ivy is growing densely around the tree. Hollowed out dead branch wrapped around the trunk.	Within land required

⁹⁴ Roost types for which feature is considered suitable coded as follows: T = Transitional roost; M = Maternity roost; S = Satellite roost; H = Hibernation roost, D = Day roost; F = Feeding roost; MAT = Mating roost, N = Night roost. Definitions as provided in Hundt L (2012), *Bat Surveys: Good Practice Guidelines* 2nd edition, Bat Conservation Trust.

⁹⁵ Hereafter the term 'land required' is used as a shortened version of the full term 'land required for the construction of the Proposed Scheme'.

Roosting (building and structures)

- 2.4.269 Desk based initial assessments of roosting potential within buildings and/or structures were undertaken using desk study records, a review of committed developments, aerial photographs and data from Extended Phase 1 habitat survey.
- 2.4.270 Initial assessment of 44 buildings and/or structures currently identified to be at high risk of demolition found no buildings to have confirmed roosts. Four buildings were identified to have a high potential to support roosting bats. Three buildings and/or structures were found to contain features with moderate potential to support roosting bats.
- 2.4.271 Nineteen buildings and/or structures not identified to be at high risk of demolition were subject to an initial assessment within the land required for the construction of the Proposed Scheme. Three buildings, associated with Cuttle Mill Fishery, were identified as confirmed summer (non breeding) roosts for commoner bat species through a review of committed developments. A further three buildings were found to contain features with high potential and two buildings were found to contain features with moderate potential to support roosting bats.
- 2.4.272 Thirty one buildings and/or structures within 100m of land required for the construction of the Proposed Scheme were subject to initial assessments. None were found to have confirmed roosts; six were found to contain features with a high potential and six were found to contain features with moderate potential to support roosting bats.
- 2.4.273 Detailed internal inspections were carried out at the buildings and/or structures where access was available. Forty one buildings and/or structures identified to be at high risk of demolition were subject to a detailed inspection. No buildings identified to have high and moderate potential were downgraded to low potential/scoped out following detailed inspection.
- 2.4.274 Fifteen buildings and/or structures within the land required for the construction of the Proposed Scheme but not identified to be at high risk of demolition were subject to detailed inspection. No buildings identified to have high and moderate potential were downgraded to low potential/scoped out following detailed inspection.
- 2.4.275 Twenty-three buildings and/or structures within 100m of land required for the construction of the Proposed Scheme were subject to detailed inspection. No buildings identified to have high and moderate potential were downgraded to low potential/scoped out following detailed inspection.
- 2.4.276 Where access was available emergence surveys were carried out at those buildings and/or structures that were identified as confirmed roosts or which had high to moderate potential.
- 2.4.277 Thirteen buildings and/or structures with potential for demolition were subject to emergence survey. A further four buildings and/or structures were subject to emergence survey within land required for the construction of the Proposed Scheme. A further 16 buildings and/or structures were subject to emergence survey within 100m of land required for the construction of the Proposed Scheme.

Summary

- 2.4.278 Details of confirmed building roosts in this area are provided in Table 99.
- 2.4.279 Following the full suite of surveys the results found four buildings and/or structures identified to be at high risk of demolition contained confirmed roosts; no buildings within land required for the construction of the Proposed Scheme contained confirmed roosts; eight buildings and/or structures within 100m of land required for the construction of the Proposed Scheme contained confirmed roosts.
- 2.4.280 For buildings where no confirmed bat roost was found, no buildings and/or structures, identified to have potential for demolition, were found to have high potential to support roosting bats. Three buildings and/or structures were found to have moderate potential to support roosting bats.
- 2.4.281 Three buildings and/or structures within land required for the construction of the Proposed Scheme were found to have high potential to support roosting bats. Two of the buildings and/or structures were found to have moderate potential to support roosting bats.
- 2.4.282 One of the buildings and/or structures between the land required for the construction of the Proposed Scheme and 100m was found to have high potential to support roosting bats. Four buildings and/or structures were found to have moderate potential to support roosting bats.

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Table 99: Confirmed bat roosts in buildings/structures in CFA20

Ecology survey code	Location	OS grid reference	Building/ structure type	Species confirmed utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ⁹⁶	Roost description	Distance from the land required for construction of the Proposed Scheme ⁹⁷ (m)
030-BS1-166003	Building South of A4097 Kingsbury Road	SP 19072 93425	Barn	Common pipistrelle (3)	23 July 2012 Emergence	T, D	Gaps under roof tiles/felt.	21m
030-BS1-166005	Building South of A4097 Kingsbury Road	SP 19082 93439	Barn	<i>Myotis</i> sp. (1) common <i>Pipistrellus</i> sp. (1) brown long-eared bat (1)	5 July 2012 Emergence 26 September 2012 Emergence	T, D	Gaps under roof tiles/felt. Gap between roof tile and roof membrane. Gaps between roof timbers.	30m
030-BS1-166009	Building South of A4097 Kingsbury Road	SP 19102 93460	Other: stable	<i>Myotis</i> species (1)	05 July 2012 Emergence	T.D	Gaps under roof tiles	5m
030-BS1-166010	Building South of A4097 Kingsbury Road	SP 19025 93465	Other: Residential	Natterer's (1) Common pipistrelle (2)	31 May 2012 Internal Inspection of loft space 08 August 2013 Emergence	H, T, D	Gaps under roof tiles and along eaves, gaps noted along ridge tiles of pitched roof. Natterer's bat confirmed roosting within loft, numerous crevices noted along roof beams and rafters. Cellar identified with hibernation roost potential.	25m
030-BS1-168001	Building associated with Cuttle Mill Fishery	SP 19106 95088	Residential	Soprano pipistrelle (1)	12 June 2013 Emergence	T, D	Access to soffit box.	20m

⁹⁶ Roost types for which feature is considered suitable coded as follows: T = Transitional roost; M = Maternity roost; S = Satellite roost; H = Hibernation roost, D = Day roost; F = Feeding roost; MAT = Mating roost, N = Night roost. Definitions as provided in Hundt L (2012), *Bat Surveys: Good Practice Guidelines* 2nd edition, Bat Conservation Trust.

⁹⁷ Hereafter the term 'land required' is used as a shortened version of the full term 'land required for the construction of the Proposed Scheme'.

Ecology survey code	Location	OS grid reference	Building/ structure type	Species confirmed utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ⁹⁶	Roost description	Distance from the land required for construction of the Proposed Scheme ⁹⁷ (m)
030-BS1-168002	Building associated with Cuttle Mill Fishery	SP 19046 95134	Converted Barn	Brown long-eared bat (1)	02 May 2012 Inspection	T, D	Plastic roofing membrane, insulation between joists, Roofing felt/membrane	30m.
030-BS1-168003	Building associated with Cuttle Mill Fishery	SP 19056 95146	Residential	Brown long-eared bat (1), common pipistrelle (1)	12 June 2013 Emergence	T, D	Gap allowing access to roof void.	15m
030-BS1-168004	Building associated with Cuttle Mill Fishery	SP 19031 95151	Residential	Soprano pipistrelle (2)	21 June 2013 Emergence	T, D	Gaps under roof tiles/felt.	15m
030-BS1-167001	Farm north of A4097 Kingsbury Road	SP 19321 93993	Residential Building at high risk of demolition	<i>Myotis</i> species (18)	30 May 2012 Emergence	M, S, T, D	Gaps under roof tiles/felt. Loose flashing. Cavity in wall. Gap allowing access to roof void.	Within land required
030-BS1-167023	Farm north of A4097 Kingsbury Road	SP 19308 94028	Barn Building at high risk of demolition	Brown long-eared bat (unknown)	20 June 2013 Inspection – droppings only	T, D	Gaps under roof tiles/felt. Gaps allowing access to roof void. Hollows in brick wall. Beams (internal) suitable for roosting sites.	Within land required
030-BS1-169004	Building South of Bodymoor Heath Road	SP 19026 96295	Barn Building at high risk of demolition	Common pipistrelle (unknown)	07 August 2013 Inspection – droppings only	F	Feeding roost above mezzanine in open-ended barn unit.	Within land required
030-BS1-169005	Building South of Bodymoor Heath Road	SP 18963 96289	Residential Building at high risk of demolition	Brown long-eared (unknown)	29 July 2013 Inspection – droppings only	T, D	Gaps under roof tiles/felt. Gap allowing access to roof void. Gap between roof tile and roof membrane. Access to soffit box.	Within land required

Bat activity surveys

- 2.4.283 A total of eight transect survey routes were surveyed within this area as shown in Table 100. Transect surveys undertaken were able to collect some information on the assemblage of bat species associated with potential key features within the landscape including woodland and water bodies as well as arable and pasture habitats within area.
- 2.4.284 The most southern transect comprised habitats associated with Hams Hall Distribution Centre. Habitats are urban and dominated by commercial buildings and associated infrastructure.
- 2.4.285 Two transect routes assessed habitats associated with woodland along Hams Lane and habitats along Faraday Avenue and comprised a large arable field and associated field boundaries. The route of one transect includes woodland Hams Lane Wood.
- 2.4.286 One transect assessed habitats south of the A4097 Kingsbury Road which comprised large arable field and fields of improved grassland. The habitats are bound by road corridors of the A446 Lichfield Road and A4097 Kingsbury Road. Habitat links along field boundaries connect habitats within the Proposed Scheme to the River Tame and large areas of water bodies associated with Kingsbury Water Park, west of Kingsbury.
- 2.4.287 One transect assessed an unnamed plantation woodland between Marston Lane and the M42.
- 2.4.288 One transect assessed bat activity within habitats associated with Cuttle Mill Fishery, comprising two large water bodies, woodland (Lower Mill Plantation and Mill Plantation) and improved grassland and arable fields with associated field boundaries of hedgerows and occasional trees. The habitats retain strong connective links to habitats within the wider landscape with potential to support foraging and commuting bats. North Wood lies to the north and is connected along field boundaries and an unnamed tributary of the Langley Brook. To the west lies the corridor of the A4091 Tamworth Road backed by the Belfry Golf Course which contains several water bodies which have potential to support foraging bat activity.
- 2.4.289 Two transect routes assessed habitats that lie east and west of the A4091 Tamworth Road including Langley Brook. The habitats are linked to suitable roosting, commuting and foraging habitats outside of land required for the construction of the Proposed Scheme including Coneybury Wood and a complex of large water bodies and woodland, including Middleton Pool.
- 2.4.290 The results of bat activity surveys are provided in Table 101 to Table 108.
- 2.4.291 The following bat species have been recorded during the range of bat activity surveys conducted in support of the scheme in this area: common pipistrelle, soprano pipistrelle, noctule, brown long-eared bat, Daubenton's, Natterer's and Leisler's. Additional calls for *Myotis* species, *Nyctalus* species have also been recorded during transect surveys.

Table 100: Bat activity surveys conducted within CFA20

Ecology survey code	Transect Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA1-164004	Hams Hall Distribution Park	6	04 October 2012	09 August 2013	EC-06-112,H3
030-BA1-165001	habitats associated with woodland along Hams Lane and habitats along Faraday Avenue	11	01 August 2012	23 July 2013	EC-06-112,G8
030-BA1-166001	Habitats south of A4097 Kingsbury Road	8	01 August 2012	23 July 2013	EC-06-119,I7
030-BA1-167001	Plantation woodland between Marston Lane and the M42	10	20 June 2012	26 July 2013	EC-06-113,I3
030-BA1-168001	Habitat around Cuttle Mill Fishery	13	12 June 2012	08 August 2013	EC-06-113,G6
030-BA1-170001	Habitats that lie east and west of the A4091 Tamworth Road including Langley Brook	7	17 July 2012	24 July 2013	EC-06-114,A5
030-BA1-170002	Habitats that lie east and west of the A4091 Tamworth Road including Langley Brook	6	22 April 2013	27 June 2013	EC-06-115,E7

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Table 101: Summary of Transect Survey results for 030-BA1-164,004

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-164,004	Hams Hall Distribution Park				Area of waste land with scrub and semi-mature and young trees. Adjacent to industrial buildings.																
Visit number and date	Weather conditions				Total species passes during transect survey ⁹⁸																
	Temp (°C)	Cloud (0-8) ⁹⁹	Rain (0-5) ¹⁰⁰	Wind (0-12) ¹⁰¹	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Es
Visit 1: Dusk 04 October 2012	13	8	1	6	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dawn 05 October 2012	12.3	8	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dusk 29 July 2013	16	1	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dawn 30 July 2013	15	5	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dusk 08 August 2013	19	7	0	1	3	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: Dawn 09 August 2013	16	8	3	1	1	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

⁹⁸ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

⁹⁹ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

¹⁰⁰ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

¹⁰¹ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.

Table 102: Summary of Transect Survey results for 030-BA1-165001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-165001	habitats associated with woodland along Hams Lane and habitats along Faraday Avenue				Arable land with hedgerows, surrounded by roads and railway and adjacent buildings.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: Dusk 01 August 2012	22	1	0	1	0	0	0	0	0	0	0	0	0	0	4	0	0	1	0	0	0
Visit 2: Dawn 19 September 2012	9	8	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dusk 19 September 2012	8	8	2	4	6	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 4: Dusk 25 September 2012	11	8	0-1	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dawn 26 September 2012	9.5	8	0	0-2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: Dusk 03 October 2012	11	2	0	2	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: Dusk 04 October 2012	12.5	8	0	2	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: Dusk 06 June 2013	12.5	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 9: Dawn 07 June 2013	8	1/8	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 10: Dusk 23 July 2013	25.3	7	0	1	6	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
Visit 11: Dawn 23 July 2013	21.4	2	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Table 103: Summary of Transect Survey results for 030-BA1-166001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-166001	Habitats south of A4097 Kingsbury Road				Arable land; some buildings.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/ Es
Visit 1: Dusk 01 August 2012	22	1	0	1	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 2: Dusk 19 September 2012	8	8	2	4	6	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 3: Dawn 19 September 2012	9	8	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: 04 October 2012	12.5	8	0	2	16	3	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0
Visit 5: Dusk 21 May 2013	12	8	0	2-4	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 6: Dusk 05 June 2013	12.5	0/8	0	0	4	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 7: Dawn 06 June 2013	9.5	8	0	0-1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: Dusk 23 July 2013	25.3	7	0	1	5	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0

Table 104: Summary of Transect Survey results for 030-BA1-167001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-167001	Plantation woodland between Marston Lane and the M42				15 year old plantation next to road.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: Dusk 20 June 2012		0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
Visit 2: Dusk 24 July 2012	23	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dusk 29 August 2012	13	0-8	0	2	2	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
Visit 4: Dawn 30 August 2012	12	8-4	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 5: Dawn 05 October 2012	9.5	8	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: 13 May 2013	9	2	0	4	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
Visit 7: Dusk 13 June 2013	14	4	0	4	2	1	0	0	0	0	0	0	0	0	2	2	0	1	0	0	0
Visit 8: Dawn 14 June 2013	10	2	0	2	6	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 9: Dusk 23 July 2013	19	6	0	1	13	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
Visit 10: Dawn 26 July 2013	15.6	5	0	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Table 105: Summary of Transect Survey results for 030-BA1-168001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-168001	Habitat around Cuttle Mill Fishery				Ponds/pools cover much of site with some small streams feeding the pond; broadleaf woodland to north-east.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: Dusk 12 June 2012	15.6-10.8	7	0	1	7	15	0	0	0	1	1	0	0	0	3	0	0	1	0	0	0
Visit 2: Dawn 13 June 2012		8	0	2	9	3	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0
Visit 3: Dawn 11 July 2012		4	0	0	7	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 4: Dusk 06 September 2012	12	2	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dawn 07 September 2012	11	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 6: Dusk 02 October 2012	9.7	8	2	6	5	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 7: Dawn 19 October 2012	8.4-8.1	6-7	0	0-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: Dusk 30 April 2013	5	0	0	1	14	8	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
Visit 9: 15 May 2013	4	6	0	0	13	9	0	0	0	0	0	0	0	0	3	0	0	2	0	0	0
Visit 10: Dusk 25 July 2013	18	3	0	1	14	8	0	0	0	0	0	0	0	0	2	0	0	1	0	2	0
Visit 11: Dawn 26 July 2013	13	2	0	1	18	20	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0
Visit 12: Dusk 07 August 2013	12	2	0	0	12	7	0	2	0	0	0	0	0	0	1	0	0	3	0	0	0
Visit 13: Dawn 08 August 2013	11	4	0	0	8	11	0	1	0	0	0	0	0	0	2	1	0	0	0	0	0

Table 106: Summary of Transect Survey results for 030-BA1-170001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-170001	Habitats that lay east and west of the A4091 Tamworth Road including Langley Brook.				Lake formed of quarry pit; broadleaved plantation to east; 3 lagoons/lakes within nature reserve; grassland surrounded by trees.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: Dusk 17 July 2012	18	4	0	2	12	4	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0
Visit 2: Dusk 07 August 2012	19/14	8	0	2	7	4	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0
Visit 3: Dusk 10 September 2012	17/16	8	0	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dawn 11 September 2012	12/11	2	0	2	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dusk 10 October 2012	12.5	8	0	1	7	3	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 6: Dawn 23 July 2013	18	5	5	1	2	7	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 7: Dusk 24 July 2013	23	2	0	1	13	3	0	0	0	1	0	0	0	0	0	0	0	4	0	0	0

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Table 107: Summary of Transect Survey results for 030-BA1-170002

Ecology survey code	Transect location				Description of habitats covered by transect																	
030-BA1-170002	Habitats that lay east and west of the A4091 Tamworth Road including Langley Brook.				Arable land surrounded by hedgerows and mature trees; pond to south; broadleaved woodland to west.																	
Visit number and date	Weather conditions				Total species passes during transect survey																	
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es	
Visit 1: Dusk 22 April 2013	15	8	0	3-4	10	10	0	0	0	0	2	0	0	0	3	0	0	1	0	0	0	
Visit 2: Dawn 24 April 2013	8.5-7.5	0	0	0-2	8	8	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	
Visit 3: Dusk 29 May 2013	10	8	2	1	10	11	0	0	0	0	0	0	0	0	2	1	0	1	0	0	0	
Visit 4: Dawn 05 June 2013	12	8	0	3	16	10	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0	
Visit 5: Dusk 26 June 2013	13-12	2-6	0	3	13	12	0	0	0	0	1	0	0	0	4	0	0	0	0	0	0	
Visit 6: Dawn 27 June 2013	10	7	0	2	8	10	1	0	0	0	0	0	0	0	6	3	0	1	0	0	0	

Table 108: Summary of Transect Survey results for 030-BA1-172001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-172001	Field boundaries south of Gallows Brook (excluding Gallows Brook)				Arable land; to north-east pond surrounded by semi-improved grassland and scattered scrub; small stream within a narrow strip of broadleaf woodland.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: Dusk 16 July 2012	16.5/16	8	0	2-4	1	4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 2: Dusk 06 August 2012	18/14	8	0	2	5	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 3: Dusk 03 September 2012	19/17	2	0	0	7	1	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0
Visit 4: Dawn 04 September 2012	14/14	2	0	0	4	3	0	0	0	0	0	0	0	0	4	0	0	4	0	0	0
Visit 5: Dusk 10 October 2012	13	8	0	1	17	13	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0
Visit 6: Dusk 22 May 2013	9.5	2	0	2-4	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
Visit 7: Dusk 12 June 2013	16	8	0-1	0-2	3	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
Visit 8: Dawn 13 June 2013	13	8	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0

Static detectors

2.4.292 A total of 14 static surveys have been positioned within this area as shown in Table 109. To date, the dominant species recorded are common and soprano pipistrelle as will be as will be expected due to both species being widely distributed and common within Warwickshire and the UK.

2.4.293 A broad range of habitats was encompassed by the static surveys and were predominantly associated with each of the transect surveys. The statics associated with transects were positioned as follows:

- one static was located within habitats associated with Newlands Farm;
- two statics were located within habitats associated with Dunton Hall and Mullensgrove Farm;
- one static was located within an unnamed plantation woodland that lies between Marston Lane and the M42, on the north side of Marston Lane;
- one static survey assessed bat activity along the Birmingham and Fazeley Canal;
- two static surveys assessed bat activity within habitats associated with Cuttle Mill Fishery;
- one static survey assessed habitats associated with Upper House Farm, Middleton; and
- two static surveys assessed bat activity within habitats associated with Park Gate Farm, Middleton.

2.4.294 The results of the static surveys are provided in Table 110 to Table 121.

Table 109: Static surveys conducted within CFA20

Ecology survey code	Static Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA2-165001	Habitats associated with woodland along Hams Lane and habitats along Faraday Avenue	7	23 July 2012	31 July 2013	EC-06-112, E7
030-BA2-166001	Habitats south of A4097 Kingsbury Road	7	23 August 2012	25 August 2013	EC-06-119, G8
030-BA2-166002	Habitats south of A4097 Kingsbury Road	5	17 April 2013	25 August 2013	EC-06-112, A4
030-BA2-167001	Plantation woodland between Marston Lane and the M42	4	18 April 2013	01 August 2013	EC-06-113, J4
030-BA2-167002	Part of Birmingham and Fazeley canal on the north west side of Marston Lane	4	24 April 2012	09 August 2013	EC-06-113, J5
030-BA2-168001	Habitat around Cuttle Mill Fishery	7	06 June 2012	10 June 2013	EC-06-113, H5
030-BA2-168002	Habitat around Cuttle Mill Fishery	3	24 April 2013	10 June 2013	EC-06-113, G5

Ecology survey code	Static Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA2-170001	Habitats that lie east and west of the A4091 Tamworth Road including Langley Brook	9	30 July 2012	14 August 2013	EC-06-114, B6
030-BA2-170002	Habitats that lie east and west of the A4091 Tamworth Road including Langley Brook	6	04 October 2012	14 August 2013	EC-06-114, A10
030-BA2-171002	Habitats that lie east and west of the A4091 Tamworth Road including Langley Brook	2	17 July 2013	13 August 2013	EC-06-115, D6
030-BA2-171003	Habitats that lie east and west of the A4091 Tamworth Road including Langley Brook	3	19 June 2013	12 August 2013	EC-06-115, F6
030-BA2-171004	Habitats that lie east and west of the A4091 Tamworth Road including Langley Brook	3	19 June 2013	12 August 2013	EC-06-115-E6

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Table 110: Summary of static detector monitoring results for 030-BA2-165001

Ecology survey code	Location	OS Grid			Description of habitat													
030-BA2-165001	habitats associated with woodland along Hams Lane and habitats along Faraday Avenue	SP 18988 92398			Mature tree/hedgerow adjacent to arable farmland on Newlands Farm.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁰² (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
31 July 2012 – 07 August 2012	7	381	6	0	5	0	0	0	0	0	0	5	0	0	1	11	0	0
11 September 2012 – 15 September 2012	4	154	16	0	12	0	0	0	0	0	0	16	2	0	0	0	0	0
01 October 2012 – 07 October 2012	6	17	6	3	2	0	0	0	0	0	0	10	0	0	1	0	0	0
24 April 2013 – 01 May 2013	7	19	19	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0
21 May 2013 – 28 May 2013	7	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

¹⁰² Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 111: Summary of static detector monitoring results for 030-BA2-166001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-166001	Habitats south of A4097 Kingsbury Road	SP 18932 93554	Hedgerow around poor semi-improved grassland.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁰³ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
04 October 2012 – 10 October 2012	6	47	3	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0
17 April 2013 – 25 April 2013	8	3	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
13 May 2013 – 20 May 2013	7	11	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0

¹⁰³ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 112: Summary of static detector monitoring results for 030-BA2-166002

Ecology survey code	Location	OS Grid				Description of habitat												
030-BA2-166002	Habitats south of A4097 Kingsbury Road	SP 19317 93325				Hedgerow around poor semi-improved grassland.												
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁰⁴ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
17 April 2013 – 25 April 2013	8	15	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

¹⁰⁴ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 113: Summary of static detector monitoring results for 030-BA2-167001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-167001	Plantation woodland between Marston Lane and the M42	SP 19222 94386	Hawthorn hedge and scrub on edge of poor semi-improved grassland ridge.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁰⁵ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
11 September – 18 September 2012	7	1759	952	1	0	0	0	0	0	0	0	108	0	0	1	1	0	0
04 October – 10 October 2012	6	170	534	0	0	0	0	0	0	0	0	33	0	0	1	1	0	0
18 April 2013 – 25 April 2013	7	19	19	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0
16 May 2013 – 21 May 2013	5	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 July 2013 – 01 August 2013	7	51	90	0	0	0	0	0	0	0	0	73	1	0	0	2	0	0

¹⁰⁵ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 114: Summary of static detector monitoring results for 030-BA2-167002

Ecology survey code	Location	OS Grid			Description of habitat													
030-BA2-167002	Part of Birmingham and Fazeley canal on the north west side of Marston Lane	SP 19160 94524			Canal with tow path and hedgerow, adjacent to arable fields and rough motorway verge.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁰⁶ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
24 April 2013 – 01 May 2013	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02 August 2013 – 09 August 2013	7	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0

¹⁰⁶ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 115: Summary of static detector monitoring results for 030-BA2-168001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-168001	Habitat around Cuttle Mill Fishery	SP 19160 94903	Elder on rough scrub margin dominated by brambles and nettles around pond in centre of small arable field.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁰⁷ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
06 June 2012 – 07 June 2012	1	91	1	0	0	0	0	0	0	0	0	3	4	0	0	0	0	0
23 August 2012 – 29 August 2012	6	237	162	0	127	0	0	0	0	0	0	27	3	0	125	0	0	108
19 September 2012 – 24 September 2012	5	146	37	0	0	0	0	0	0	0	0	16	0	0	2	1	0	1
15 October 2012 – 22 October 2012	7	3	2	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0
24 April 2013 – 01 May 2013	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

¹⁰⁷ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 116: Summary of static detector monitoring results for 030-BA2-168002

Ecology survey code	Location	OS Grid			Description of habitat													
030-BA2-168002	Habitat around Cuttle Mill Fishery	SP 19154 95019			Ash tree in mature deciduous woodland strip, separating arable farmland from fishery lake.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁰⁸ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
24 April 2013 – 01 May 2013	7	970	707	1	0	0	0	0	0	0	0	51	0	0	8	6	0	0

¹⁰⁸ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 117: Summary of static detector monitoring results for 030-BA2-170001

Ecology survey code	Location	OS Grid				Description of habitat												
030-BA2-170001	Habitats that lie east and west of the A4091 Tamworth Road including Langley Brook	SP 18904 97435				On the edge of an area of trees and scrub beside a water-filled quarry.												
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁰⁹ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
11 September 2012 – 18 September 2012	7	198	56	1	0	0	0	0	0	0	0	95	0	0	2	5	0	0
04 October 2012 – 11 October 2012	7	53	134	0	0	0	0	0	0	0	0	25	0	0	5	0	0	0
18 April 2013 – 25 April 2013	7	409	921	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
13 May 2013 – 20 May 2013	7	35	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

¹⁰⁹ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 118: Summary of static detector monitoring results for 030-BA2-170002

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-170002	Habitats that lie east and west of the A4091 Tamworth Road including Langley Brook	SP 18319 97542	Poor semi-improved field boundary, hawthorn hedge with road on north side.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹¹⁰ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
04 October 2012 – 07 October 2012	4	92	27	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
19 April 2013 – 25 April 2013	6	23	65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 May 2013 – 20 May 2013	7	862	164	0	0	0	0	0	0	0	0	25	0	0	1	1	0	0

¹¹⁰ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 119: Summary of static detector monitoring results for 030-BA2-171002

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-171002	Habitats that lie east and west of the A4091 Tamworth Road including Langley Brook	SP 18422 98402	Gappy hedgerow with mixed species. Adjacent to arable field.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹¹¹ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
06 August 2013 – 13 August 2013	7	1020	168	0	0	0	0	0	0	0	0	7	0	0	3	1	0	0

¹¹¹ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 120: Summary of static detector monitoring results for 030-BA2-171003

Ecology survey code	Location	OS Grid				Description of habitat												
030-BA2-171003	Habitats that lie east and west of the A4091 Tamworth Road including Langley Brook	SP 18510 98013				Located within mature oak tree along hawthorn dominated hedgerow on southern boundary of site adjacent to arable land.												
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹¹² (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
19 June 2013 – 26 June 2013	7	186	52	0	0	0	0	0	0	0	0	7	0	0	6	2	0	0

¹¹² Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 121: Summary of static detector monitoring results for 030-BA2-171004

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-171004	Habitats that lie east and west of the A4091 Tamworth Road including Langley Brook	SP 18477 98130	Mature crack willow within hedgerow adjacent to arable farmland, to the north with stream and farmland to the south.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹¹³ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
19 June 2013 – 26 June 2013	7	269	118	0	0	0	0	0	0	0	0	31	0	0	6	2	0	1

¹¹³ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Discussion

- 2.4.295 Information from WBRC has identified the presence of a minimum of eight species of bat within 10km of the route of the Proposed Scheme within this area, five of which were confirmed during surveys: common pipistrelle, soprano pipistrelle, brown long-eared bat, noctule and Daubenton's
- 2.4.296 Natterer's and Leisler's bats were also recorded during surveys but have not been previously identified by the WBRC within 10km of the route of the Proposed Scheme within this area. Brown long-eared bats were infrequently recorded although the constraints of the acoustic survey methodology, coupled with the call characteristics of the species suggest that they are likely to be under-recorded.
- 2.4.297 Serotine and whiskered/Brandt's bats, were listed in the desk study records as present within 10km of the route of the Proposed Scheme, but were not recorded during the 2012/2013 surveys. A number of unidentified *Myotis* calls were recorded during the surveys and it may be that these represent whiskered/Brandt's bats.
- 2.4.298 Seven species (with the potential for the presence of further *Myotis* species) were identified at static and transect locations within this area. Diversity was relatively consistent throughout the area with the majority of transect and static surveys identifying common and soprano pipistrelle species as would be expected given the common status of both species.
- 2.4.299 A building was found at a farm north of A4097 Kingsbury Road to support a population of *Myotis* species. The survey results indicate the presence of a possible maternity roost for *Myotis* species with a peak emergence count of 18 in July 2012. No droppings were encountered during the inspection surveys but call analysis indicative of whiskered/Brandt's. Based on the geographic location of the building it is likely that species would be Natterer's, Daubenton's, Brandt's or whiskered.
- 2.4.300 Two buildings at a farm south of Bodymoor Heath Lane were found to support a small number of common pipistrelle bat; which are likely to be summer (non breeding) roosts. The species were confirmed through DNA analysis of bat droppings only. Only a small number of droppings were found (approximately 30) and the distribution was consistent with a small summer non-breeding or transient roost although there is a possibility for more droppings to be present underneath roofing felt. The second building roost was found to support feeding perch for brown long-eared bat. The species was confirmed through DNA analysis of bat droppings only. A small number of droppings (50-100) were found on top of a mezzanine floor within an open sided barn below a suitable feeding perch
- 2.4.301 There is a low density of buildings and structures found within this area. Buildings have been identified to have high potential to support roosting bats. Field surveys have identified the presence of five species of bat which make use of buildings regularly for transient and/or maternity use: common pipistrelle and soprano pipistrelle, brown long-eared bat, Natterer's and Daubenton's. These species vary in the level of fidelity they show to roost sites both within and between years but it is likely that high potential buildings may be used by one or more of these species for maternity, transitional, non-breeding or transient roosting purposes.

- 2.4.302 A number of trees with high potential to support roosting bats have been identified. Field surveys have confirmed the presence of seven species of bat within the area which make use of tree roosts for transient and/or maternity use. Noctule and Leisler's bats are almost exclusively tree-dwelling species and exhibit a higher level of fidelity to particular roosting sites than many other tree-dwelling species. Daubenton's, Natterer's and brown long-eared bats frequently utilise tree roosts and exhibit frequent roost switching. These species are therefore likely to utilise a higher number of different roost features throughout the year. Common and soprano pipistrelle also utilise tree roosts less exclusively but there is little information on their level of fidelity to individual trees. These bats are likely to make use of a number of suitable tree roost sites throughout the year including maternity, transitional, non-breeding and transient roosts.
- 2.4.303 The habitats within the Curdworth and Middleton area which were assessed for roosting, commuting and foraging bat activity have been split into the following areas, south to north, for the purposes of discussion:
- habitats associated with Hams Hall Distribution Centre;
 - habitats south of A4097 Kingsbury Road;
 - woodland along Hams Lane and habitats along Faraday Avenue;
 - habitat within plantation woodland between Marston Lane and the M42; and
 - habitat around Cuttle Mill Fishery including Birmingham and Fazeley Canal.
- 2.4.304 Habitats associated with Hams Hall Distribution Centre Low levels of commuting activity by commoner bat species such as common pipistrelle and soprano pipistrelle
- 2.4.305 Assemblage of bats using roosting, foraging and commuting habitats south of A4097 Kingsbury Road habitats (pasture fields and hedgerows) within the land required for the Proposed Scheme support moderate levels of bat activity including common pipistrelle, soprano pipistrelle, noctule, brown long-eared bat and calls identified as *Myotis* species. A low level of Leisler's and Nathusius' pipistrelle bat activity has been recorded during static surveys, considered to be rarer bat species within England and rare within Warwickshire.
- 2.4.306 Three buildings were found to support a small number of Natterer's bat, likely summer (non-breeding) roosts and the species showed evidence of switching roost site throughout the season. A peak count of one *Myotis* bat was recorded emerging from two buildings; one building roost was confirmed through the identification of an individual Natterer's bat found during an inspection survey. Dropping numbers and distribution was consistent with small summer, non-breeding or transient roost sites. All three building roosts lies within 100m of the land required for the construction of the Proposed Scheme. Roosts found to support individuals of common pipistrelle and brown long-eared bat (peak emergence of one). Both species are widespread and common within the UK. Three of the buildings fall within land required for the construction of the Proposed Scheme. The fourth building lies within 100m of land required for the construction of the Proposed Scheme.

- 2.4.307 One building found to support individuals of brown long-eared bat. Roost confirmed through droppings only, no emergence or re-entry of bats was confirmed. Brown long-eared bat are widespread and common within the UK
- 2.4.308 Surveys of habitats associated with woodland along Hams Lane and habitats along Faraday Avenue confirmed foraging and commuting activity within these habitats of a diverse assemblage of bat species at a low level of activity. Species included common pipistrelle, soprano pipistrelle, brown long-eared bat, Natterer's, noctule and *Myotis* species. Two confirmed tree roosts were found within Hams Lane Woodland; of these one supported a single soprano pipistrelle (found in situ during tree climbing surveys) within 100m of land required for the construction of the Proposed Scheme. One tree has been confirmed through a small number of droppings found during tree climbing surveys. Species unknown, but potentially supports individuals of 'rarer' bat species confirmed as present within this area. The tree is within land required for the construction of the Proposed Scheme.
- 2.4.309 Surveys of habitat within plantation woodland between Marston Lane and the M42 confirmed a low level of foraging and commuting activity within the woodland of a diverse assemblage of bat species, including common pipistrelle soprano pipistrelle, brown long-eared bat and *Myotis* species. A low level of activity by Leisler's has been recorded during static surveys, a rare species for Warwickshire. Roosting potential within this area of woodland was low due to the young age of trees.
- 2.4.310 The habitat around Cuttle Mill Fishery, including: the Birmingham and Fazeley Canal; Lower Mill and Mill Plantation; and water bodies, support low levels of activity dominated by commoner bat species (common pipistrelle, soprano pipistrelle and noctule). A low level of activity by Leisler's has been recorded during static surveys, a rare species for Warwickshire. Near to the woodland habitat within Cuttle Mill Fishery there are four building summer (non-breeding) roosts for brown long-eared bat and common pipistrelle with peak emergence counts of one or two individuals; it is likely that these habitats support bats utilising these roosts
- 2.4.311 Surveys of habitats that lie east and west of the A4091 Tamworth Road, including: Langley Brook west of Middleton Park and Coneybury Wood found a diverse assemblage of bats recorded foraging and commuting along field boundaries, water bodies, tree lines and Langley Brook including: common pipistrelle, soprano pipistrelle, *Myotis* species, noctule. Leisler's activity was confirmed during static surveys, a rare species within England and Warwickshire. A low density of trees with high and moderate roosting potential was recorded in hedgerows.

CFA21 Drayton Bassett, Hints and Weeford

Overview of bat species status in this area

- 2.4.312 None of the statutory or non-statutory sites within 10km of the land required for construction of the Proposed Scheme have bats noted in their citations.
- 2.4.313 Bat records provided by SER within and up to 10km from the land required for construction of the Proposed Scheme have identified a minimum of seven species within this area: soprano pipistrelle and brown long-eared bat; three or four *Myotis* species with Daubenton's and Natterer's confirmed and at least one of either

whiskered or Brandt's bats; and two *Nyctalis* species with Leisler's and noctule confirmed.

- 2.4.314 The route of the Proposed Scheme within this area passes through a predominantly arable farmland landscape, with areas of improved and semi-improved grassland fields with occasional woodland copses and water bodies.
- 2.4.315 The landscape outside of the land required for construction of the Proposed Scheme to the east and west, whilst remaining largely agricultural, contains frequent water bodies and wooded habitats including Swinfen Hall lake and woods, the Coach and Horses Plantation, the Devil's Dressing Room and Trickle Coppice which are likely to provide higher quality foraging habitat for bats. Higher quality habitat for bats is represented by a band through which the proposed route passes between habitats bounded by the A5 and Sutton Road, centred around Hints. Around 2km to the east of the land required for construction of the Proposed Scheme is a linear strip of riparian habitats associated with the River Tame which are likely to represent important foraging and commuting habitat for local bat populations.
- 2.4.316 Connectivity of habitats within the land required for construction of the Proposed Scheme is provided by hedgerows and scattered copses as well as water courses including the Black-Bourne Brook and Gallows Brook; the latter forms the southern boundary of this area and provides direct habitat links to a range of riparian habitats associated with the River Tame to the east. Two major roads the Sutton Road and the A5 intersect the route of the Proposed Scheme in an east-west orientation and may impact upon north-south connectivity within this area. There are a number of minor roads: Shirral Drive, Cranebrook Hill, Bangle Lane (locally known as Waggoner's Lane), Brockhurst Lane (known locally as Rookery Lane), Rock Hill and Knox's Grave Lane; which cross the route of the Proposed Scheme within this area. The verges and boundary habitats of the minor roads which comprise continuous hedgerows and are unlit have the potential to support commuting and foraging bats.
- 2.4.317 Information from SER has identified the presence of a minimum of eight species of bat within 10km of the route of the Proposed Scheme within this area, five of which were confirmed during field surveys including: soprano pipistrelle, brown long-eared, noctule, and Leisler's. Common pipistrelle were also confirmed during surveys but no records within 10km of the route of the Proposed Scheme, within this area, were provided by SER. Nathusius' pipistrelle were also recorded during the surveys although no records for this species were provided by SER.
- 2.4.318 A review has been undertaken of committed developments within 1km of the land required for construction of the Proposed Scheme for additional information gathered from survey results; three of the planning applications for these developments included relevant bat survey information as follows:
- 11/01027/COU: Change of use of existing stables to form accommodation for work riders. This development is located 10m from the land required for construction of the Proposed Scheme. Evidence of common pipistrelle, soprano pipistrelle, brown long-eared bat and Brandt's/whiskered foraging around the site during surveys to support the development. No evidence of roosts was found within the stables;

- 12/00383/COU: Change of use of store to Class B1 – Business Use (Building 2). This development is located 100m from the land required for construction of the Proposed Scheme. Surveys found no evidence of roosts within the building; and
- 12/00408/COU: Change of use of open fronted machinery store to Class B8 – Storage and Distribution Use (Building 1). This development is located within the land required for construction of the Proposed Scheme. Surveys found no evidence of roosts within the building.

Roosting (trees)

- 2.4.319 Initial assessments of trees were undertaken during detailed ground level assessments to confirm roosts and/or roosting potential. There are 63 trees, within the land required for the construction of the Proposed Scheme within this area, that were subject to initial assessment. No confirmed roosts were identified, five trees were found to contain features with a high potential to support roosting bats and 25 trees were found to contain features with a moderate potential to support roosting bats.
- 2.4.320 Where access was available tree climbing was undertaken in order to carry out detailed inspections. Eighteen of the 63 trees within the land required for the construction of the Proposed Scheme were subject to detailed inspection. Seven of these trees were downgraded to low or negligible potential as a consequence of the inspection.
- 2.4.321 Within 100m of land required for the construction of the Proposed Scheme, 84 trees have been subject to initial assessment. No confirmed roosts were identified, three trees were found to contain features with a high potential to support roosting bats and 50 trees were found to contain features with a moderate potential to support roosting bats.
- 2.4.322 Twenty-two of the 84 trees within 100m of land required for the construction of the Proposed Scheme were subject to detailed inspection. Nine of these trees were downgraded to low or negligible potential as a consequence of the inspection.
- 2.4.323 No trees were subject to emergence survey within land required for the construction of the Proposed Scheme. Two trees were subject to emergence survey within 100m of land required for the construction of the Proposed Scheme.

Summary

- 2.4.324 There was one confirmed roost identified within the land required for the construction of the Proposed Scheme within this area. Two trees were found to have high potential to support roosting bats and 20 trees were found to have moderate potential to support roosting bats.
- 2.4.325 There were no confirmed roosts identified within 100m of land required for the construction of the Proposed Scheme. Five trees were found to have high potential to support roosting bats and 39 trees were found to have moderate potential to support roosting bats.
- 2.4.326 Details of confirmed tree roosts in this area of the route are provided in Table 122.

Table 122: Confirmed tree roosts within CFA21

Ecology survey code	Location	OS grid reference	Tree species	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ¹¹⁴	Roost description	Distance from the land required for construction of the Proposed Scheme ¹¹⁵ (m)
030-BT1-174092	Within arable habitats north of Cranesbrook Hill Road	SK 16570 00950	Dead, species unknown	Unknown (unknown)	23 July 2013 Detailed inspection Roost identified from droppings (2) only	T, M, H	Branch cavity. Feature orientated west, 3m above ground	Within land required

¹¹⁴ Roost types for which feature is considered suitable coded as follows: T = Transitional roost; M = Maternity roost; S = Satellite roost; H = Hibernation roost, D = Day roost; F = Feeding roost; MAT = Mating roost, N = Night roost. Definitions as provided in Hundt L (2012), *Bat Surveys: Good Practice Guidelines 2nd edition*, Bat Conservation Trust.

¹¹⁵ Hereafter the term 'land required' is used as a shortened version of the full term 'land required for the construction of the Proposed Scheme'.

Roosting (building and structures)

- 2.4.327 Desk based initial assessments of roosting potential within buildings and structures were undertaken using historic records, results available from committed developments, aerial photographs and data collected during extended Phase 1 habitat surveys
- 2.4.328 Initial assessments of 55 buildings and structures currently identified to be at high risk of demolition found 12 to have confirmed roosts. Three of the buildings and structures were found to contain features with a high potential and seven were found to have features of moderate potential to support roosting bats.
- 2.4.329 Another building within the land required for the construction of the Proposed Scheme (but not currently identified to be at risk of demolition) was subjected to initial assessments. The building did not have a confirmed roost or contain features with a high or moderate potential to support roosting bats.
- 2.4.330 Within 100m of land required for the construction of the Proposed Scheme 37 buildings and structures were subject to initial assessments. None were found to support confirmed roosts. One was found to have features with high potential to support roosting bats. Six buildings were found to have a moderate potential to support roosting bats.
- 2.4.331 Detailed internal inspections were carried out at 43 of the buildings and structures identified to be at high risk of demolition. Of these two buildings and structures were downgraded to low or negligible potential as a consequence of the detailed inspection.
- 2.4.332 One building within land required for the construction of the Proposed Scheme but not identified to be at high risk of demolition was subject to detailed inspection. There was no change to the roost potential status as identified in the initial assessment of the building following the detailed inspection.
- 2.4.333 Seventeen buildings and structures within 100m of land required for the construction of the Proposed Scheme were subject to detailed inspection. There was no change to the roost potential status as identified in the initial assessment of the buildings and structures following the detailed inspection.
- 2.4.334 Where access was allowed emergence surveys were carried out at those buildings and structures that were identified to have high to moderate potential for roosting bats. Sixteen buildings and structures identified to be at high risk of demolition were subject to an emergence survey. No buildings or structures within the land required for the construction of the Proposed Scheme were subject to emergence survey. Within 100m of the land required for the construction of the Proposed Scheme one building was subject to emergence surveys

Summary

- 2.4.335 Details of confirmed building roosts are provided in Table 123.
- 2.4.336 Following the full suite of surveys the results showed that overall within this area there is a low density of building roosts. Twelve buildings identified to have high potential for demolition have confirmed roosts. None of the buildings or structures, within the

land required for construction of the Proposed Scheme have confirmed roosts. None of the buildings, within 100m of land required for the construction of the Proposed Scheme were found to have a confirmed roost.

- 2.4.337 Three of the buildings and structures identified to have high potential for demolition have a high potential and seven were found to have moderate potential to support roosting bats.
- 2.4.338 None of the buildings or structures within land required for the construction of the Proposed Scheme were found to have high to moderate potential to support roosting bats.
- 2.4.339 None of the buildings or structures within 100m of land required for the construction of the Proposed Scheme were found to have high potential to support roosting bats. Three buildings or structures were found to have moderate potential to support roosting bats.

Table 123: Confirmed bat roosts in buildings/structures in CFA21

Ecology survey code	Location	OS grid reference	Building/ structure type	Species confirmed utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ¹¹⁶	Roost description	Distance from the land required for construction of the Proposed Scheme ¹¹⁷ (m)
030-BS1-174001	Residential property within habitats bounded by A453 and Drayton Lane	SK 16922 00393	Residential	Common pipistrelle (3)	26 July 2012 Emergence survey	T, D	Present within loft at south gable end.	Within land required
030-BS1-174002	Barn within habitats bounded by A453 and Drayton Lane	SK 16936 00422	Barn	Common pipistrelle (2), brown long-eared bat (1)	22 June 2012 Emergence survey	T, M, H, S	Gaps through grill/air bricks at south wall, felt overlapping gable ends, gaps where gutter attached to boards.	Within land required
030-BS1-174006	Residential property within habitats bounded by A453 and Drayton Lane	SK 16738 00598	Residential	Likely common pipistrelle and or Brown long-eared bat (unknown)	07 August 2013 Internal Survey 50+ droppings found	T, D	Present in 2.3m high void where hip rafter meets ridge board.	Within land required
030-BS1-177001	Residential property at Farm near Hints	SK 15889 02923	Residential	Brown long-eared bat (1)	04 July 2013 Internal Survey One bat present. Droppings confirmed through DNA analysis of droppings.	T, D, F	Present within roof void, access under weather board.	365m
030-BS1-178006	Barn at Farm near Hints	SK 14899 03892	Barn	Brown long-eared bat (unknown)	12 August 2013 Internal Survey Confirmed through DNA analysis of droppings	T, D, M	Present in roof void, numerous lifted roof tiles, gaps in mortar under gable end tiles at both ends, roof timbers exposed.	Within land required

¹¹⁶ Roost types for which feature is considered suitable coded as follows: T = Transitional roost; M = Maternity roost; S = Satellite roost; H = Hibernation roost, D = Day roost; F = Feeding roost; MAT = Mating roost, N = Night roost. Definitions as provided in Hundt L (2012), *Bat Surveys: Good Practice Guidelines 2nd edition*, Bat Conservation Trust.

¹¹⁷ Hereafter the term 'land required' is used as a shortened version of the full term 'land required for the construction of the Proposed Scheme'.

Ecology survey code	Location	OS grid reference	Building/ structure type	Species confirmed utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ¹¹⁶	Roost description	Distance from the land required for construction of the Proposed Scheme ¹¹⁷ (m)
030-BS1-178010	Barn at Farm near Hints	SK 14856 03887	Barn	Natterer's (unknown), Common pipistrelle (1)	12 August 2013 Internal Survey Confirmed Natterer's roost through DNA analysis of droppings 13 August 2013 Emergence survey	T, D, M	Present in roof void, roof timbers exposed, pitched roof, open ended, internal walls missing brickwork.	Within land required
030-BS1-178011	Barn at farm near Hints	SK 14835 03884	Barn	Natterer's (unknown)	12 August 2013 Internal Survey Confirmed through DNA analysis of droppings	T, D, F, M	Present in roof void, missing mortar, loose roof tiles, internal and external gaps and holes in brick work, especially around doors, roof timbers exposed	Within land required
030-BS1-178013	Barn at farm near Hints	SK 14872 03907	Barn	Brown long-eared bat (unknown)	13 August 2013 Internal Survey Confirmed through DNA analysis of droppings	F	Present in roof void, under ridge near window that has a missing pane of glass, lifted and missing roof tiles, gaps in mortar under gable end tiles, gaps between roof timbers	Within land required
030-BS1-178014	Barn at farm near Hints	SK 14844 03904	Barn	Natterer's (unknown) common pipistrelle (2), brown long-eared bat (2)	12 August 2013 Natterer's confirmed through DNA analysis of droppings 13 August 2013 Brown long-eared Confirmed through DNA analysis of droppings and Emergence	T, D, F, M	Present in roof void.	Within land required

Ecology survey code	Location	OS grid reference	Building/ structure type	Species confirmed utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ¹¹⁶	Roost description	Distance from the land required for construction of the Proposed Scheme ¹¹⁷ (m)
030-BS1-178016	Barn at farm near Hints	SK 14844 03904	Barn	Natterer's (unknown)	12 August 2013 Internal Survey DNA testing on droppings found in 2013 failed to identify species. 2009 DNA testing had proved presence of Natterer's	T, D, F, M	Present in roof void, missing mortar under gable end tiles, loose and missing roof tiles, internal and external gaps and holes in brick work, especially around doors, gaps between roof timbers.	Within land required
030-BS1-178017	Barn at farm near Hints	SK 14874 03927	Barn	Likely brown long-eared bat (unknown)	12 August 201 Internal Survey Known from droppings only – DNA analysis on droppings failed to identify species	T, F, D	Present in roof void, missing mortar under gable end tiles, loose and missing roof tiles, internal and external gaps and holes in brick work, especially around doors, gaps between roof timbers.	Within land required
030-BS1-178018	Barn at farm near Hints	SK 14853 03928	Barn	<i>Myotis</i> species (2), common pipistrelle (1) brown long-eared bat (1)	13 August 2013 Emergence/re-entry	T, D, F, M	Present in roof void, missing mortar under gable end tiles, loose and missing roof tiles, internal and external gaps and holes in brick work, especially around doors, gaps between roof timbers.	Within land required

Ecology survey code	Location	OS grid reference	Building/ structure type	Species confirmed utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ¹¹⁶	Roost description	Distance from the land required for construction of the Proposed Scheme ¹¹⁷ (m)
030-BS1-178019	Barn at farm near Hints	SK 14834 03914	Barn	Common pipistrelle (unknown) Natterer's (unknown)	12 August 2013 Common pipistrelle confirmed through DNA analysis of droppings 2009 Review of committed developments confirmed Natterer's roost in 2009	T, D, F, M	Present in roof void, missing mortar under gable end tiles, loose and missing roof tiles, internal and external gaps and holes in brick work, especially around doors, gaps between roof timbers.	Within land required

Bat activity surveys

- 2.4.340 Seven transect routes have been surveyed within land required for the construction of the Proposed Scheme in this area as shown in Table 124.
- 2.4.341 One transect route assessed bat activity within habitats along hedgerows and field boundaries bounded by Sutton Road and Drayton Lane. Habitats included within the transect routes were dominated by improved grassland fields bounded by hedgerows and hedgerow trees including a number with moderate or high potential to provide roosting opportunities for bats. Small areas of scattered mixed trees and scrub and a pond with associated marshy grassland were also included. The habitats covered within the transect route are relatively open but are connected through hedgerows with areas of woodland and further water bodies which lie away from the route corridor associated with Seventeen Acre Wood and the River Tame to the north-east and Trickley Coppice to the south-west. The habitats within the transect routes have connectivity to confirmed roosts associated with Cranebrook as well as further scattered buildings including Stone House and Hill Farm which are identified as possessing high and moderate potential to support roosting bats. Habitat links along vegetated boundary features such as hedgerows enable dispersal of bat species between habitats of bat interest both within and outside of the Proposed Scheme.
- 2.4.342 Three transect routes assessed bat activity within habitats bounded by A5 and Sutton Road, centred around Hints. Habitats included within the transect routes include arable fields and improved grassland bounded by hedgerows as well as edge habitat associated with their interface with woodlands including Job's Hill Plantation, Rookery and Roundhill Wood. A number of small ponds and a stretch of the Black Brook are also included within the transect routes towards the northern section of this area. The habitats within the transect routes are part of a belt of scattered copses, woodland blocks and water bodies interspersed with arable/improved grassland fields which extends to the north-east and the west of the area. This landscape is likely to create a mosaic of habitats which provide good quality foraging opportunities for bats. The habitats within the transect routes have connectivity to confirmed roosts associated with Buck's Head Farm and Home Farm to the north and White Horse Farm to the south as well as two further roosts to the south which were identified from the background data search. Habitat links along the Black Brook, along woodland edges and along vegetated boundary features such as hedgerows enable dispersal of bat species between habitats of bat interest both within and outside of the land required for construction of the Proposed Scheme.
- 2.4.343 Two transect routes assessed bat activity within habitats centred on Packington Moor Farm, bound by the corridors of the A5 to the south and A51 to the north. Habitats included within the transect routes include improved grassland, marshy grassland, arable fields and associated hedgerows and hedgerow trees including a number with moderate or high potential to provide roosting opportunities for bats. A small number of minor water bodies and occasional areas of scattered trees were present throughout the landscape in this area. Areas of more interest for bats are linked to two complexes of buildings associated with Packington Moor Farm and Buck's Head Cottages. These habitats lay in-between two areas of higher quality foraging habitat which are outside of the land required for construction of the Proposed Scheme, comprising a mosaic of water bodies and wooded habitats associated with Swinfen

Hall to the north-west and Packington Farm to the south-east. Habitat links along vegetated boundary features such as hedgerows enable dispersal of bat species between habitats of bat interest both within and outside of the land required for construction of the Proposed Scheme.

2.4.344 The following bat species have been recorded during the bat activity surveys conducted in support of the assessment in this area:

- common pipistrelle, soprano pipistrelle, noctule, *Myotis* species and brown long-eared bats were found throughout this area. Records include both foraging and commuting bats and the numbers of passes recorded are consistent with regular use of these habitats for foraging or commuting purposes;
- Daubenton's bat was confirmed in the habitats bounded by A5 and Sutton Road, centred around Hints based on flight behaviour observed over the Black Brook. Other *Myotis* species throughout the remainder of transect surveys within this area were recorded to genus level only; and
- Leisler's bat was recorded associated with habitats bounded by Sutton Road and Drayton Lane Only a small number of passes was recorded for this species indicating passage or transient use rather than core foraging habitat.

2.4.345 Some calls recorded were unable to be identified to species level and *Myotis* sp., *Nyctalus* sp. and *Pipistrellus* sp. have also been recorded.

2.4.346 Transect survey results are provided in Table 126 to Table 130.

Table 124: Bat activity surveys conducted within CFA21

Ecology survey code	Transect Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA1-174001	Habitats along hedgerows and field boundaries bounded by A453 and Drayton Lane	8	30 May 2013	08 August 2013	EC-06-117, F5
030-BA1-175001	Habitats bounded by A5 and A543, centered on Hints (including Roundhill wood and the Black Bourne Brooke, and along the woodland edges of the Rockery and Job's Hill Plantation and hedgerows)	4	17 July 2013	09 August 2013	EC-06-118, D8
030-BA1-176001	Habitats bounded by A5 and A543, centered on Hints (including Roundhill wood and the Black Bourne Brooke, and along the woodland edges of the Rockery and Job's Hill Plantation and hedgerows)	10	28 August 2012	08 Aug 2013	EC-06-120, I4
030-BA1-177001	Habitats bounded by A5 and A543, centered around Hints (including Roundhill wood and the Black Bourne Brooke, and along the woodland edges of the Rockery and Job's Hill Plantation and hedgerows)	6	13 May 2013	07 Aug 2013	EC-06-120, C5

Ecology survey code	Transect Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA1-178001	Packington Moor Farm, including Tamworth Land and Knox's Grave Lane	10	31 July 2012	10 May 2013	EC-06-121, C7
030-BA1-179001	Packington Moor Farm, including Tamworth Land and Knox's Grave Lane	10	08 October 2012	13 August 2013	EC-06-122, I8

Table 125: Bat activity transect survey results – 030-BA1-174.001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-174.001	Habitats along hedgerows and field boundaries bounded by Sutton Road and Drayton Lane				Improved grassland surrounded by hedgerow; field pond surrounded by willow scrub and two mature oak trees; small area of scattered mixed trees to south-west; area of marshy grassland.																
Visit number and date	Weather conditions				Total species passes during transect survey ¹¹⁸																
	Temp (°C)	Cloud (0-8) ¹¹⁹	Rain (0-5) ¹²⁰	Wind (0-12) ¹²¹	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: Dusk 30 May 2013	13.8	8	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dawn 31 May 2013	12.9	8	0	1	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 3: Dusk 17 June 2013	16.4	7	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: Dawn 18 June 2013	11.4	8	0	1	10	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 5: Dusk 18 July 2013	21.0	0	0	0	10	2	0	0	0	0	0	0	0	0	1	0	0	3	1	0	0
Visit 6: Dawn 19 July 2013	14.6	0	0	0	14	2	0	0	0	0	0	0	0	0		0	0	1	2	0	0
Visit 7: Dusk 07 August 2013	17	2	0	0-1	8	2	0	0	0	0	0	0	0	0	1	2	0	1	0	0	0
Visit 8: Dawn 08 August 2013	10.9	0	0	0-1	5	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0

¹¹⁸ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp. – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

¹¹⁹ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

¹²⁰ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

¹²¹ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.

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Table 126: Bat activity transect survey results – 030-BA1-175001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-175001	Habitats bounded by A5 and A543, centered around Hints(including Roundhill Wood and the Black-Bourne Brooke, and along the woodland edges of the Rookery and Job's Hill Plantation and hedgerows				Arable and improved grassland; pond; species poor hedge to west.																
Visit number and date	Weather conditions				Total species passes during transect survey ¹²²																
	Temp (°C)	Cloud (0-8) ¹²³	Rain (0-5) ¹²⁴	Wind (0-12) ¹²⁵	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: Dusk 17 July 2013	21.5	3	0	4	8	2	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 2: Dawn 18 July 2013	14.1	2	0	1	5	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dusk 08 August 2013	19.2	7	0	1-2	1	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 4: Dawn 09 August 2013	15.9	8	0-1	2	2	2	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0

¹²² Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

¹²³ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

¹²⁴ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

¹²⁵ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.

Table 127: Bat activity transect survey results – 030-BA1-176001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-176001	Habitats bounded by A5 and A543, centered around Hints(including Roundhill wood and the Black Bourne Brooke, and along the woodland edges of the Rockery and Job's Hill Plantation and hedgerows				Improved grassland adjacent to woodland (at southern end) and pond (at northern end).																
Visit number and date	Weather conditions				Total species passes during transect survey ¹²⁶																
	Temp (°C)	Cloud (0-8) ¹²⁷	Rain (0-5) ¹²⁸	Wind (0-12) ¹²⁹	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: Dusk 28 August 2012	16	7	0	0	4	2	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 2: Dawn 29 August 2012	16.8	1	0	0	12	7	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dusk 29 August 2012	12	0	0	2	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 4: Dawn 30 August 2012	8	1	0	0	6	4	0	0	0	0	0	0	0	0	1	0	0	3	0	0	0
Visit 5: Dusk 30 April 2013	10-5	0	0	2	1	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Visit 6: Dawn 15 May 2013	6	8	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: Dusk 25 July 2013	14	1	0	0	5	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: Dawn 26 July 2013	14	2	0	0	12	6	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Visit 9: Dusk 07 Aug 2013	11	1	0	1	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 10: Dawn 08 Aug 2013	8	4	0	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

¹²⁶ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

¹²⁷ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

¹²⁸ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

¹²⁹ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.

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Table 128: Bat activity transect survey results – 030-BA1-177001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-177001	Habitats bounded by A5 and A543, centered around Hints(including Roundhill wood and the Black Bourne Brooke, and along the woodland edges of the Rockery and Job's Hill Plantation and hedgerows				Improved grassland adjacent to pine plantation; river to north.																
Visit number and date	Weather conditions				Total species passes during transect survey ¹³⁰																
	Temp (°C)	Cloud (0-8) ¹³¹	Rain (0-5) ¹³²	Wind (0-12) ¹³³	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: 13 May 2013	7	6	1	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: 14 May 2013	6	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: 24 July 2013	18	2	0	0	11	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: 25 July 2013	17	5	1	1	8	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: 06 Aug 2013	12	1	0	1	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: 07 Aug 2013	11	7	0	0	5	5	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0

¹³⁰ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp. – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

¹³¹ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

¹³² Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

¹³³ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.

Table 129: Bat activity transect survey results – 030-BA1-178001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-178001	Packington Moor Farm, including Tamworth Land and Knox's Grave Lane				Arable land with young broadleaf plantation to south; pond in centre.																
Visit number and date	Weather conditions				Total species passes during transect survey ¹³⁴																
	Temp (°C)	Cloud (0-8) ¹³⁵	Rain (0-5) ¹³⁶	Wind (0-12) ¹³⁷	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: Dusk 31 July 2012	17/15	6-8	0	2-3	8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: Dusk 14 August 2012	19.6/18.4	7-8	0	0-1	27	2	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1
Visit 3: Dawn 15 August 2012	16.9/14.7	6-8	0	0-1	24	6	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 4: Dusk 03 September 2012	13.7	1-2	0	0	11	1	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0
Visit 5: Dusk 25 September 2012	9	8	2	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: Dawn 26 September 2012	9	8	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: Dusk 22 October 2012	11.8/12.4	8	0	3	11	6	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 8: Dawn 23 October 2012	11.3	8	0	1-2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 9: Dusk 09 May 2013	9	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 10: Dawn 10 May 2013	8	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

¹³⁴ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp. – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

¹³⁵ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

¹³⁶ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

¹³⁷ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.

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Table 130: Bat activity transect survey results – 030-BA1-179001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-179001	Packington Moor Farm, including Tamworth Land and Knox's Grave Lane				Arable land, with areas of improved grassland. Farm buildings in centre. Three small patches of broadleaved woodland. Ponds in north-west.																
Visit number and date	Weather conditions				Total species passes during transect survey ¹³⁸																
	Temp (°C)	Cloud (0-8) ¹³⁹	Rain (0-5) ¹⁴⁰	Wind (0-12) ¹⁴¹	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: Dusk 08 October 2012	12	4	0	0	19	6	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 2: Dusk 22 April 2013	13	4	0	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dusk 20 May 2013	14	8	0	1	3	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 4: Dawn 21 May 2013	14	8	1	3	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: Dusk 26 June 2013	15	2	0	1	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: Dawn 27 June 2013	10	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 7: Dusk 29 July 2013	16	2	0	3	5	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 8: Dawn 30 July 2013	14	2	0	1	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 9: Dusk 12 August 2013	16	3	0	4	4	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 10: Dawn 13 August 2013	9.5	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

¹³⁸ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

¹³⁹ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

¹⁴⁰ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

¹⁴¹ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.

Static detectors

- 2.4.347 A total of 13 static surveys have been completed within this area. Six of these locations used SM2+ BAT detectors whilst the remaining seven used Anabat SD1 detectors.
- 2.4.348 Common and soprano pipistrelle are the dominant species recorded through static surveys, as would be expected due to both species being widely distributed and common within Staffordshire and the UK.
- 2.4.349 *Myotis* species were also recorded regularly throughout the route corridor within this area. These are identified only to genus level due to the acoustic similarity of the different *Myotis* species and the absence of observer information on flight behaviour to inform likely species identification.
- 2.4.350 Leisler's bat was recorded through a small number of calls within habitats bounded by A5 and A543, centred around Hints; habitats bounded by A453 and Drayton Lane; and habitats comprising Gallows Brook, hedgerows, field boundaries, occasional copses and water bodies to the south-west of Drayton Bassett. The low number of calls is indicative of passage or transient use rather than core foraging or commuting habitat.
- 2.4.351 Nathusius' pipistrelle was recorded through a small number of calls within habitats bounded by A5 and A51, centred on Packington Moor; habitats bounded by A5 and A543, centred around Hints; and habitats comprising Gallows Brook, hedgerows, field boundaries, occasional copses and water bodies to the south-west of Drayton Bassett. These areas of the landscape contain rivers or static water bodies which are consistent with the foraging ecology of this species. The low number of calls is indicative of passage or transient use rather than core foraging or commuting habitat.
- 2.4.352 Brown long-eared bats were recorded rarely within the route corridor in this area although the constraints of the acoustic survey methodology, coupled with the call characteristics of the species suggest that they are likely to be under-recorded.
- 2.4.353 A broad range of habitats was encompassed by the static surveys and were prominently associated with each of the transect survey routes. The statics associated with transects were as follows:
- one static was located within habitats comprising Gallows Brook, hedgerows, field boundaries, occasional copses and water bodies to the south-west of Drayton Bassett. The surveys assessed activity over a pond surrounded by semi-improved grassland within arable fields;
 - one static was located within habitats along hedgerows and field boundaries bounded by Drayton Lane. The surveys assessed activity along a hedgerow on a pasture field boundary;
 - seven statics were located within habitats centred around Hints. The surveys assessed activity along woodland edges, the boundaries of pasture fields and the Black Bourne Brook; and
 - two statics were located within habitats centred on Packington Moor. The surveys assessed activity along hedgerows on arable field boundaries.

2.4.354 A further three statics were located habitats centred around Hints. These were in locations away from transect routes and designed to assess the extent to which the vegetated road corridors were used by local bat populations. These three locations are:

- along a hedgerow between an arable field and Rock Hill Road;
- on a deciduous shrub bank along the A5 dual carriageway; and
- along a hedgerow between an arable field and Bangley Lane.

Table 131: Bat static surveys conducted within CFA21

Ecology survey code	Static Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA2-172001	habitats comprising Gallows Brook, hedgerows, field boundaries, occasional copses and water bodies to the south-west of Drayton Bassett	4	23 July 2012	11 October 2012	EC-06-116b, F3
030-BA2-172002	habitats comprising Gallows Brook, hedgerows, field boundaries, occasional copses and water bodies to the south-west of Drayton Bassett	5	24 April 2013	08 August 2013	20
030-BA2-172003	habitats comprising Gallows Brook, hedgerows, field boundaries, occasional copses and water bodies to the south-west of Drayton Bassett	3	28 May 2013	13 August 2013	20
030-BA2-174001	within habitats along hedgerows and field boundaries bounded by A453 and Drayton Lane	5	18 April 2013	13 August 2013	EC-06-117, C6
030-BA2-175001	within habitats bounded by A5 and A543, centred around Hints	4	24 April 2013	25 July 2013	EC-06-118, F6
030-BA2-176001	within habitats bounded by A5 and A543, centred around Hints	7	13 September 2012	13 August 2013	EC-06-118, A5
030-BA2-176002	within habitats bounded by A5 and A543, centred around Hints	7	20 September 2012	13 August 2013	EC-06-120, F5
030-BA2-176003	within habitats bounded by A5 and A543, centred around Hints	7	13 September 2012	13 August 2013	EC-06-120, F7
030-BA2-177001	within habitats bounded by A5 and A543, centred around Hints	7	29 August 2012	13 August 2013	EC-06-120, E7
030-BA2-177002	within habitats bounded by A5 and A543, centred around Hints	7	20 September 2012	13 August 2013	EC-06-120, E5
030-BA2-177003	within habitats bounded by A5 and A543, centred around Hints	7	13 September 2012	13 August 2013	EC-06-120, D7

Ecology survey code	Static Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA2-177004	within habitats bounded by A5 and A543, (Along a hedgerow between an arable field and Rock Hill Road)	5	16 April 2013	12 August 2013	EC-06-120, B6
030-BA2-178001	within habitats bounded by A5 and A543 (On a deciduous shrub bank along the A5 dual carriageway)	8	23 July 2012	22 July 2013	EC-06-121, E9
030-BA2-178002	within habitats bounded by A5 and A543 (Along a hedgerow between an arable field and Bangley Lane)	5	16 April 2013	12 August 2013	EC-06-121, H6
030-BA2-179001	within habitats bounded by A5 and A51, centred on Packington Moor	6	08 October 2012	13 August 2013	EC-06-121, A5
030-BA2-180001	within habitats bounded by A5 and A51, centred on Packington Moor	6	08 October 2012	13 August 2013	EC-06-122, D6

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Table 132: Summary of static detector survey results – 030-BA2-172001

Ecology survey code	Location	OS Grid	Description of habitat																
030-BA2-172001	habitats comprising Gallows Brook, hedgerows, field boundaries, occasional copses and water bodies to the south-west of Drayton Bassett	SP 18904 97442	An area of semi-improved grassland within arable fields beside a fishing pond. Hedges and trees nearby – facing over pond.																
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁴² (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep	
23 July 2012 – 02 August 2012	5	152	96	0	0	0	0	0	0	0	0	31	0	0	14	3	0	0	
25 August 2012 – 30 August 2012	5	20	16	1	0	0	0	0	0	0	0	63	0	0	7	12	0	0	
11 September 2012 – 18 September 2012	7	11	9	1	0	0	0	0	0	0	0	16	0	0	5	5	0	0	
04 October 2012 – 11 October 2012	7	15	10	1	0	0	0	0	0	0	0	68	1	0	73	14	0	0	

¹⁴² Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 133: Summary of static detector survey results – 030-BA2-172002

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-172002	habitats comprising Gallows Brook, hedgerows, field boundaries, occasional copses and water bodies to the south-west of Drayton Bassett	SP1804999039	Mature oak tree adjacent to fallow arable field. On bank of stream less than 1m wide. Opposite bank of stream covered by hawthorn hedge, adjacent to arable field.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁴³ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
01 August 2013 – 08 August 2013	7	774	70	0	0	0	0	0	0	0	0	6	1	0	1	2	0	0

¹⁴³ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 134: Summary of static detector survey results – 030-BA2-172001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-172003	habitats comprising Gallows Brook, hedgerows, field boundaries, occasional copses and water bodies to the south-west of Drayton Bassett	SP1772499432	Within occasionally managed hedgerow, overlooking arable field															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁴⁴ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
16 July 2013 – 23 July 2013	7	185	77	0	0	0	0	0	0	0	0	7	0	0	7	4	0	0

¹⁴⁴ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 135: Summary of static detector survey results – 030-BA2-174001

Ecology survey code	Location	OS Grid		Description of habitat														
030-BA2-174001	within habitats along hedgerows and field boundaries bounded by A453 and Drayton Lane	SK 16819 00718		Improved pasture, hedge, mature trees, and pond.														
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁴⁵ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
18 April 2013 – 24 April 2013	6	258	30	0	0	0	0	0	0	0	0	4	0	0	0	2	0	0
15 May 2013 – 19 May 2013	5	12	9	0	0	0	0	0	0	0	0	0	1	0	0	6	0	0

¹⁴⁵ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 136: Summary of static detector survey results – 030-BA2-175001

Ecology survey code	Location	OS Grid		Description of habitat														
030-BA2-175001	within habitats bounded by A5 and A543, centred around Hints	SK 16158 01431		Within managed hedgerow, facing arable field. Road behind hedgerow.														
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁴⁶ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
24 April 2013 – 02 May 2013	8	25	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 May 2013 – 21 May 2013	7	110	54	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0
25 June 2013 – 02 July 2013	7	196	42	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0
16 July 2013 – 25 July 2013	9	54	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0

¹⁴⁶ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 137: Summary of static detector survey results – 030-BA2-176001

Ecology survey code	Location	OS Grid	Description of habitat																
030-BA2-176001	within habitats bounded by A5 and A543, centred around Hints	SK 15597 02324	Mature deciduous woodland adjacent to rough grassland, woodland also borders pastures and arable farmland.																
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁴⁷ (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep	
13 September 2012 – 19 September 2012	6	1	4	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	
11 October 2012 – 17 October 2012	6	8	10	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
06 August 2013 – 13 August 2013	7	314	193	0	1	0	0	0	0	0	0	13	0	0	3	0	0	1	

¹⁴⁷ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 138: Summary of static detector survey results – 030-BA2-176002

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-176002	within habitats bounded by A5 and A543, centred around Hints	SK 15560 02774	Located on the edge of a broad-leaved woodland plantation by improved grassland.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁴⁸ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
20 September 2012 – 26 September 2012	6	0	3	0	0	0	0	0	0	0	0	19	0	0	0	0	0	0
11 October 2012 – 17 October 2012	6	1	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
06 August 2013 – 13 August 2013	7	432	454	0	18	0	0	0	0	0	0	610	0	0	3	0	0	1

¹⁴⁸ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 139: Summary of static detector survey results – 030-BA2-176003

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-176003	within habitats bounded by A5 and A543, centred around Hints	SK 15336 02691	Silver birch in mature deciduous woodland and adjacent to pasture. Rhododendron understory in woodland.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁴⁹ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
13 September 2012 – 19 September 2012	6	208	127	1	3	0	0	0	0	0	0	19	0	0	1	9	0	1
04 October 2012 – 10 October 2012	6	50	51	0	24	0	0	0	0	0	0	2	1	0	4	0	0	2
06 August 2013 – 13 August 2013	7	259	134	3	0	0	0	0	0	0	0	3	0	0	7	0	0	1

¹⁴⁹ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 140: Summary of static detector survey results – 030-BA2-177001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-177001	within habitats bounded by A5 and A543, centred around Hints	SK 15267 02836	Oak tree in mature deciduous woodland strip on river bank adjacent to pasture.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁵⁰ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
29 August 2012 – 04 September 2012	6	25	29	0	0	0	0	0	0	0	0	14	0	0	2	0	0	0

¹⁵⁰ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 141: Summary of static detector survey results – 030-BA2-177002

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-177002	within habitats bounded by A5 and A543, centred around Hints	SK 15361 02990	Scattered mixed deciduous trees over bracken and scrub. Adjacent to improved pasture and farm track.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁵¹ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
20 September 2012 – 26 September 2012	6	4	36	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0
11 October 2012 – 17 October 2012	6	2	13	0	1	0	0	0	0	0	0	3	0	0	0	0	0	1

¹⁵¹ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 142: Summary of static detector survey results – 030-BA2-177003

Ecology survey code	Location	OS Grid	Description of habitat																
030-BA2-177003	within habitats bounded by A5 and A543, centred around Hints	SK 15107 02971	Mature deciduous woodland strip, bordering coniferous plantation, adjacent to pasture.																
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁵² (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep	
13 September 2012 – 19 September 2012	6	3	8	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	
04 October 2012 – 10 October 2012	6	41	12	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	

¹⁵² Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 143: Summary of static detector survey results – 030-BA2-177004

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-177004	within habitats bounded by A5 and A543, (Along a hedgerow between an arable field and Rock Hill Road)	SK 15025 03540	Surrounded by arable farmland. Stream along a tree line. Woodland within 300m.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁵³ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
16 April 2013 – 24 April 2013	8	44	99	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0

¹⁵³ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 144: Summary of static detector survey results – 030-BA2-178001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-178001	within habitats bounded by A5 and A543 (On a deciduous shrub bank along the A5 dual carriageway)	SK 14437 04204	Tree on deciduous scrub bank of motorway, 2m from adjacent arable farmland.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁵⁴ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
23 July 2012 – 29 July 2012	6	46	8	0	0	0	0	0	0	0	0	8	0	0	2	0	0	0
06 August 2012 – 14 August 2012	8	89	16	2	7	0	0	0	0	0	0	4	0	0	1	0	0	0
06 September 2012 – 12 September 2012	6	5	4	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1
09 October 2012 – 15 October 2012	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

¹⁵⁴ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 145: Summary of static detector survey results – 030-BA2-178002

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-178002	within habitats bounded by A5 and A543 (Along a hedgerow between an arable field and Bangley Lane)	SK 14952 03786	Hedgerow along arable field.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁵⁵ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
16 April 2013 – 24 April 2013	8	44	99	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0

¹⁵⁵ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 146: Summary of static detector survey results – 030-BA2-179001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-179001	within habitats bounded by A5 and A51, centred on Packington Moor	SK 14736 05127	Arable field margin with tree lined track.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁵⁶ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
08 October 2012 – 12 October 2012	5	915	108	0	58	0	0	0	0	0	0	7	0	0	1	0	0	0
22 April 2013 – 29 April 2013	7	150	6	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0

¹⁵⁶ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 147: Summary of static detector survey results – 030-BA2-180001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-180001	within habitats bounded by A5 and A51, centred on Packington Moor	SK 14758 06151	Facing onto field edge in hedge line.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁵⁷ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
08 October 2012 – 15 October 2012	7	291	57	0	0	0	0	0	0	0	0	44	0	0	4	0	0	0
22 April 2013 – 29 April 2013	7	153	20	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0

¹⁵⁷ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Discussion

- 2.4.355 The habitats present within areas where access for field surveys was not permitted were predominantly arable and pasture fields with hedgerows and other field boundaries; these habitat types were well represented within transect and static surveys throughout the remainder of the land required for construction of the Proposed Scheme within this area. Two areas of woodland: Job's Hill Plantation and Rookery Wood, were not accessed although the land surrounding these sites were covered through transect and static surveys.
- 2.4.356 The transect and static surveys conducted in 2012 and 2013 were distributed to encompass a wide range of habitats representative of those present within the area including arable habitat which is the dominant habitat type. Other habitat types surveyed included water bodies, broadleaved woodland, arable fields and arable field margins as well as the Black Brook and Gallows Brook.
- 2.4.357 The static and transect surveys identified common and soprano pipistrelle as the most abundant species within the area which is to be expected given the status of these species. Natterer's bat and the potential presence of further unidentified *Myotis* species were recorded occasionally through activity surveys along with a number of noctule and brown long-eared bat records.
- 2.4.358 The majority of the desk study records are for bats recorded in flight with a small number of possible roost sites (no information provided) of brown long-eared, soprano pipistrelle, *Pipistrellus* species and two unknown species; none of these are located within the land required for construction of the Proposed Scheme.
- 2.4.359 Brown long-eared bats were infrequently recorded although the constraints of the acoustic survey methodology, coupled with the call characteristics of the species suggest that they are likely to be under-recorded. Roost sites for this species were confirmed within this area confirming their presence.
- 2.4.360 The assemblage of species recorded is less abundant than that recorded in the background data records. A total of seven/eight species are recorded as present within 10km either side of the proposed route within this area; the *Myotis* species Daubenton's and whiskered/Brandt's have not been identified during the surveys conducted in 2012/2013. This may be due to limitations of the acoustic survey technique in the absence of finding a roost site; DNA analysis of droppings is the most reliable way to differentiate Brandt's bat from the morphologically similar whiskered bat or the other acoustically similar *Myotis* species. A number of unidentified *Myotis* calls were recorded during the surveys.
- 2.4.361 The habitats within the Drayton Bassett, Hints and Weeford area which were assessed for roosting, commuting and foraging bat activity have been split into the following eight sections, south to north, for the purposes of discussion:
- potential assemblage of rarer bat species associated with roosting habitat at Rookery and Job's Hill Plantation;
 - Natterer's bat population at a farm near Hints (EC-05-060, C7);
 - population of bats using one tree roost along a hedgerow within arable habitats north of Cranesbrook Hill road;

- foraging and commuting habitats bounded by A5 and A51, centred on Packington Moor Farm, including Tamworth Lane and Knox's Grave Lane;
- foraging and commuting habitats bounded by A5 and A543, centred around Hints (including Roundhill Wood and the Black-Bourne Brooke, and along the woodland edges of the Rookery and Job's Hill Plantation and hedgerows);
- foraging and commuting habitats along hedgerows and field boundaries bounded by A453 and Drayton Lane;
- foraging and commuting habitats comprising Gallows Brook, hedgerows, field boundaries, occasional copses and water bodies, south-west of Drayton Bassett;
- common pipistrelle population using roosts at a Farm, near Hints;
- brown long-eared bat population using roosts at a Farm, near Hints; and
- common pipistrelle population using a roost at a farm near Packington Moor.

- 2.4.362 The habitat at the Rookery and Job's Hill Plantation and semi-natural woodlands are dominated by species of broadleaved trees. Access into the woodlands was not available and so potential tree roosts could not be surveyed. However activity and static surveys undertaken on the periphery of these woodlands confirmed a range of species including common pipistrelle, soprano pipistrelle, brown long-eared bars, *Myotis* species and noctules.
- 2.4.363 Noctules are almost exclusively tree-dwelling species and exhibit a higher level of fidelity to particular roosting sites than many other tree-dwelling species. Brown long-eared bats frequently utilise tree roosts and exhibit frequent roost switching¹⁵⁸. These species are therefore likely to utilise a higher number of different roost features throughout the year. Common and soprano pipistrelle also utilise tree roosts less exclusively but there is little information on their level of fidelity to individual trees. These bats are likely to make use of a number of suitable tree roost sites throughout the year including maternity, transitional, non-breeding and transient roosts.
- 2.4.364 It is assumed that the woods at Rookery could support breeding colonies of both common and 'rarer' species based on the assemblage recorded in the area.
- 2.4.365 At a farm near Hints (EC-05-060, C7) five buildings were found to support a small number of Natterer's bat, likely summer (non breeding) roosts. A peak count of two Natterer's bats were recorded emerging from one building, all other building roosts confirmed through DNA analysis of bat droppings only. Dropping numbers and distribution was consistent with a small summer non – breeding or transient roost. A review of committed developments within this area identified three of these buildings as confirmed Natterer's roosts in 2009. One of these identified as a small maternity roost historically with a peak count of 5-9 bats. However the average maternity size for Natterer's bat is larger than this, given as 20-50 bats and the more recent 2013 building inspection identified evidence and emergence counts consistent with non-breeding summer roost only.

¹⁵⁸ Andrews, H.L (2012) Bat Tree Habitat Key: Chapter B1 – Tree-roosting bats – A woodland bat species literature review.

- 2.4.366 One tree roost was confirmed along a hedgerow within arable habitats north of Cranesbrook Hill Road. The evidence recorded was two droppings of unconfirmed species which is consistent with transient use only. This tree potentially supports individuals of 'rarer' bat species confirmed using habitats in proximity to the north and south of the roost. The tree is within the land required for construction of the Proposed Scheme.
- 2.4.367 Habitats bounded by A5 to the south and A51 to the north, centred on Packington Moor, including Tamworth Lane and Knox's Grave Lane include improved grassland, marshy grassland, arable fields and associated hedgerows and hedgerow trees as well as a small number of minor water bodies and occasional areas of scattered trees. Transect and static detector surveys within this area identified foraging and commuting common and soprano pipistrelle as well as regular recordings of a relatively lower number of noctule bat, brown long-eared and *Myotis* species. The recordings indicated foraging and commuting activity along hedgerows, field boundaries and occasional copses within a largely arable landscape. A very small number of passes by Nathusius' pipistrelle recorded during the static survey are considered indicative of passage or transient use rather than core foraging or commuting habitat. Roosting bats associated with Packington Moor Farm within this area are likely to use these habitats for foraging.
- 2.4.368 Habitats bounded by A5 and A543, centred around Hints, are dominated by arable fields and improved grassland bounded by hedgerows as well as edge habitat associated with their interface with woodlands including Job's Hill. Rookery Wood and Roundhill Wood. Aquatic habitats including a number of small ponds and a Black Brook. Transect and static detector surveys within this area identified foraging and commuting common and soprano pipistrelle, Brown long-eared bats as well as regular recordings of a relatively lower number of noctule bats and *Myotis* species. A small number of passes by Leisler's bats and Nathusius' pipistrelle recorded during static surveys are considered indicative of passage or transient use rather than core foraging or commuting habitat.
- 2.4.369 Bat activity was found to be concentrated along woodland edge and the along the corridor of Black Brook. Black Brook connects to higher quality foraging habitat outside the route corridor including water bodies and wooded habitats to the north-east including the Coach and Horses Plantation and eventually connecting to Seventeen Acre Wood and riparian habitat associated with the River Tame to the south-west.
- 2.4.370 One tree with high potential to support roosting bats was found within Roundhill Wood. However an overall assessment of trees within Roundhill Wood and along the network of hedgerows found a low density of trees with moderate potential to provide suitable roosting opportunities.
- 2.4.371 Habitats along hedgerows and field boundaries bounded by the A453 and Drayton Lane were found to support foraging and commuting common and soprano pipistrelle. Low levels of activity by noctule bats were also recorded during transect and static surveys. A small number of passes by Leisler's bats recorded during static surveys are considered to be indicative of passage or transient use rather than core foraging or commuting habitat.

- 2.4.372 Within habitats bounded by bounded by the A453 and Drayton Lane, three buildings were identified as confirmed roost sites. Two of the buildings were found to support summer (non-breeding) roosts, probably used in summer by males and/or non breeding females of common pipistrelle and brown long-eared bats (peak. emergence count of one to three individuals). Fifty scattered droppings were found at another residential building and identified as a probable non-breeding summer roost for common bat species (likely pipistrelle/brown long-eared). It is likely that commuting and foraging habitats bound by A453 and Drayton Lane will support bats using these roosts due to their proximity to the buildings.
- 2.4.373 No confirmed tree roosts were identified within this area and a low density of trees with moderate roosting potential and one with high potential was recorded in the hedgerows. The field surveys within the area have confirmed the presence of a six species of bat which utilise tree roosts for transient and/or maternity use therefore there remains the potential for these trees to be used a roost site.
- 2.4.374 Transects and static detector surveys of habitats comprising Gallows Brook, hedgerows, field boundaries, occasional copses and water bodies to the south-west of Drayton Bassett, identified foraging and commuting by common and soprano pipistrelles and occasional brown long-eared bats as well as relatively lower numbers of noctule bats. A small number of passes by Leisler's bats and Nathusius' pipistrelle were recorded during static surveys, indicative of passage or transient use rather than core foraging or commuting habitat. Gallows Brook, which forms the southern boundary of this area, connects to riparian habitats associated with the River Tame around 2km to the east as well as further suitable habitat associated with a mosaic of woodland and aquatic habitat centred on Trickleby Coppice to the west.
- 2.4.375 No building or tree roosts were identified within this area.
- 2.4.376 At a farm near Hints five buildings were found to support a small non-breeding roost of common pipistrelle probably used by males and/or non breeding females. Emergence counts carried out at the buildings recorded a peak count of 1 to 3 individuals. The roost is considered to be of local value due to the small number of bats and the fact that common pipistrelle is a common and widely distributed species within the UK.
- 2.4.377 In addition four buildings at the farm near Hints were found to support brown long-eared roosts probably used by males and/or non breeding females, identified through DNA analysis of droppings. The number and distribution of droppings in two buildings is consistent with small non-breeding summer roosts. A fifth building was identified as a feeding perch only due to the presence of a small number of droppings along with butterfly and moth wings. A review of committed developments within this area identified two occasional summer roosts and one feeding perch for brown long-eared bats in 2009. These results are consistent with the 2013 survey results. It is likely that the bat populations roosting within these buildings are utilising foraging habitat associated with the mosaic of pasture fields, woodlands and water bodies to the south of the buildings. Further roost records are identified from the background data records to the south of this area, along Bangley Lane, although no information on species or numbers are available. Further moderate potential roosting habitat was

identified associated with buildings within the Buck's Head Farm complex as well as Great Bangley Farm to the south.

- 2.4.378 A common pipistrelle population was found to be using one building at a farm near Packington Moor. The roost is most likely to be used in summer by males and/or non breeding female common pipistrelle bats with a peak emergence count of two individuals. Further moderate potential roosting habitat was identified associated with buildings within the Packington Moor Farm complex as well as a cottage to the west. No confirmed tree roosts were identified within this area although a number of hedgerow trees along and around the route of the Proposed Scheme were identified as possessing high or moderate potential to provide suitable roosting features.

CFA22 Whittington to Handsacre

Overview of bat species status in this area

- 2.4.379 None of the statutory or non-statutory sites within 5km of the centre of the Proposed Scheme in the Whittington and Handsacre area mentions bats within their citations.
- 2.4.380 The review of aerial photographs and Phase 1 habitat surveys undertaken in 2012 identified a number of features within the land required for construction of the Proposed Scheme that could provide habitat to roosting, foraging and commuting bats. Many potential roosting locations (buildings and trees) are linked to by linear features and/or continuous habitat such as hedgerows, watercourses and woodland edge, which are commonly used by many commuting bats to navigate their way through the landscape between key roosting and foraging areas.
- 2.4.381 The landscape within this area is predominantly arable. The rural landscape contains a number of small parcels of woodlands, areas of scrub and bracken, arable fields and associated hedgerow field boundaries. All of which have the potential to support roosting, foraging and commuting bats both within and outside of the land required for construction of the Proposed Scheme. The route of the Proposed Scheme within the Whittington and Handsacre area passes through a rural landscape with a range of habitats, including small parcels of broadleaved woodland and mixed plantation woodland, scrub, dense bracken and heathland, arable fields with associated field boundaries of hedgerows, amenity grassland and occasional smaller areas of semi-improved and marshy grassland.
- 2.4.382 Habitat features with the potential to support higher densities of bat activity that are crossed by the route of the Proposed Scheme include the Wyrley and Essington Canal, the Trent and Mersey Canal, the Bourne Brook and a further six unnamed watercourses which can potentially support commuting and foraging habitats for bats. The route of the Proposed Scheme passes through Ravenshaw Wood, Black Slough and the Slaish (woodlands) all of which have been surveyed and found to provide suitable habitats to support roosting, foraging and commuting bats. Habitats associated with Ravenshaw Wood, Black Slough and the Slaish (woodlands) have strong habitat links to habitats outside of land required for the construction of the Proposed Scheme including the Kings Bromley Wharf Marina and five discrete areas of woodland (Vicar's Coppice, Tomhay Wood, Fradley Wood, Big Lyntus and Little Lyntus woods) that have potential to provide roosting, commuting and foraging resources for bats.

- 2.4.383 In general there is a low density of buildings and structures within this area and mainly comprise of isolated farmsteads resulting in a low density of building roost opportunities. Nearby settlements include Lichfield, Fradley and Handsacre which lie east and west of the land required for construction of the Proposed Scheme which have potential to support roosting bats although adjacent habitats where may have an increase in light pollution which can potentially affect bats foraging and commuting behaviour.
- 2.4.384 A review has been undertaken of committed developments within 1km of the land required for construction of the Proposed Scheme for additional information gathered from survey results; three of the planning applications for these developments included relevant bat survey information as follows:
- 12/00746/OUTMEI: Demolition of 3 curtilage Listed buildings associated with Streethay House Farm and the construction of a sustainable mixed use urban extension, comprising of up to 700 dwellings; a primary school; mixed use community hub/local centre to include retail development (Use Classes A1, A2, A3, A4 and A5) and community buildings (D1 Use Class); care home (C2 Use Class); comprehensive green infrastructure including footpaths, cycle ways, open space, children's play areas, and sustainable urban drainage systems; foul and surface water drainage infrastructure including attenuation ponds; car park providing up to a maximum 300 parking spaces; and other associated ancillary infrastructure and ground remodelling. This development is located 100m from the land required for construction of the Proposed Scheme. The surveys in support of the development provided evidence of a small pipistrelle roost in one of the existing buildings; and
 - 11/00425/FULM: Demolition of selected buildings and redevelopment of Whittington Barracks to create a mixed use military development comprising education and training, office, storage and museum facilities with ancillary residential, recreational/social accommodation and related car parking, access, servicing and landscaping. (Amendment to previous permission 07/00627/FULM). This development is located 10m from the land required for construction of the Proposed Scheme. The EIA for the development reports two maternity roosts found within two buildings on site for common pipistrelle and brown long-eared bat. In addition the surveys identified a small number of non-breeding and transitional roosts used by common pipistrelle around the site. 13/00162/FULM: Demolition of existing Auction Centre and erection of new warehouse, covered loading area, ancillary office building and associated yard and car parking. This development is located partially within the land required for construction of the Proposed Scheme. No roosts were found in buildings, and low foraging activity was recorded within surrounding habitats.
- 2.4.385 Whilst a number of potential roost sites were detailed, none are located within or adjacent to the land required for construction of the Proposed Scheme or 100m buffer. The majority of the desk study records relate to bats recorded via field observations and bat detectors, with a number of possible roost sites (no information provided) of brown long-eared (seven potential roost), Natterer's (one potential roost) soprano pipistrelle (one potential roost) and a Pipistrellus species (one potential roost), as well as two records of unidentified species roosts. Roost sites are typically

associated with nearby settlements including Lichfield, Streethay, Fradley, and Rugeley and surrounding villages. Field records for common pipistrelle at Streethay, brown long-eared bat near to the Trent and Mersey Canal and Pipistrellus species at Streethay are located within 100m of the land required for construction of the Proposed Scheme.

Roosting (trees)

- 2.4.386 Initial assessments of trees were undertaken during detailed ground level assessments to confirm roosts and/or roosting potential. There are 275 trees, within the land required for the construction of the Proposed Scheme within this area that were subject to an initial assessment. No confirmed roosts were identified, 33 trees were found to contain features with a high potential to support roosting bats and 122 trees found to contain features with a moderate potential to support roosting bats.
- 2.4.387 Where access was available tree climbing was undertaken in order to carry out detailed inspections. Sixty-six of the 275 trees within the land required for the construction of the Proposed Scheme were subject to detailed inspection. Twenty-eight of these trees were downgraded to low or negligible potential as a consequence of the inspection.
- 2.4.388 Within 100m of the land required for the construction of the Proposed Scheme 219 trees have been subject to initial assessment. No confirmed roosts were identified, Twenty-seven trees were found to contain features with a high potential to support roosting bats and 131 trees were found to contain features with a moderate potential to support roosting bats.
- 2.4.389 One hundred and seventeen of the 219 trees within 100m of the land required for the construction of the Proposed Scheme were subject to detailed inspection. Sixty-nine of these trees were downgraded to low or negligible potential as a consequence of the inspection.
- 2.4.390 Four trees were subject to emergence survey within land required for the construction of the Proposed Scheme. Twenty two trees were subject to emergence survey within 100m of land required for the construction of the Proposed Scheme.

Summary

- 2.4.391 There were three confirmed roosts identified within the land required for the construction of the Proposed Scheme within this area. Thirty seven trees were found to have high potential to support roosting bats and 86 trees were found to have moderate potential to support roosting bats.
- 2.4.392 There were two confirmed roosts identified within 100m of land required for the construction of the Proposed Scheme. Twenty four trees were found to have high potential to support roosting bats and 63 trees were found to have moderate potential to support roosting bats. Sixty nine of these trees were downgraded to low or negligible potential as a consequence of the inspection.
- 2.4.393 Details of confirmed tree roosts in this area of the route are provided in Table 148.

Table 148: Confirmed tree roosts within CFA22

Ecology survey code	Location	OS grid reference	Tree species	Species confirmed as utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ¹⁵⁹	Roost description	Distance from the land required for construction of the Proposed Scheme ¹⁶⁰ (m)
030-BT1-188006	Ravenshaw Wood	SK 12534 13448	Oak	Noctule (unknown)	28 August 2012 Detailed inspection	T, D	Two woodpecker holes are present on the south side of the main stem at around 8m and 9m. One appears to be in regular use (lower surface of the entrance is polished), the other one is has cobwebs at entrance and unlikely to be in regular use.	10m
030-BT1-188010	Ravenshaw Wood	SK 12518 13430	Ash	Species unknown (unknown)	28 August 2012 Detailed inspection – droppings only	T, D	This tree has a large scar along the south side of trunk. The top of this wound narrows and leads upwards into hollow cavity, which leads for around 20cm into a branch.	30m
030-BT1-189139	Black Slough	SK 11679 13778	Pedunculate oak	Species unknown (unknown)	01 August 2013 Detailed inspection – droppings only	T, D	Hole in underside of branch Clean and dry. cavity around 15cm deep	Within land required
030-BT1-189182	Black Slough	SK 11679 13837	Pedunculate oak	Unknown (unknown)	01 August 2013 Detailed inspection – droppings	T, D, N	Three holes on dead limb's stump. Bottom two blind ended. Top one is a shallow 8x20 cm cavity	Within land required
030-BT1-189197	Black Slough	SK 11713 13949	Pedunculate oak	Noctule (1)	30 July 2013 Detailed inspection	T, D, N	Loose bark	Within land required

¹⁵⁹ Roost types for which feature is considered suitable coded as follows: T = Transitional roost; M = Maternity roost; S = Satellite roost; H = Hibernation roost, D = Day roost; F = Feeding roost; MAT = Mating roost, N = Night roost. Definitions as provided in Hundt L (2012), *Bat Surveys: Good Practice Guidelines 2nd edition*, Bat Conservation Trust.

¹⁶⁰ Hereafter the term 'land required' is used as a shortened version of the full term 'land required for the construction of the Proposed Scheme'.

Building and structures

- 2.4.394 Desk based initial assessments of roosting potential within buildings and/or structures were undertaken using historic records, aerial photographs and data from extended Phase 1 habitat surveys.
- 2.4.395 Initial assessments of 31 buildings and one bridge (Shaw Lane Overbridge) identified to be at high risk of demolition within land required for the construction of the Proposed Scheme found no confirmed roosts. One of the buildings was found to contain features with a high potential and four were found to have features of moderate potential to support roosting bats.
- 2.4.396 Eighty-two buildings and two bridges within 100m of land required for the construction of the Proposed Scheme were subject to initial assessments. Eight buildings were identified to have features with high potential to support roosting bats and 10 were found to have a moderate potential to support roosting bats
- 2.4.397 Detailed internal inspections were carried out at the buildings and/or structures where access was available.
- 2.4.398 Access was available for 21 of the buildings and one bridge identified to be at high risk of demolition. Of these none of the buildings and/or structures were downgraded from high or moderate potential to low or negligible potential as a consequence of the detailed inspection.
- 2.4.399 Fifty buildings and two bridges within 100m of land required for the construction of the Proposed Scheme were subject to detailed inspection. Of these none of the buildings were downgraded from high or moderate potential to low or negligible potential as a consequence of the detailed inspection.
- 2.4.400 Where access was available emergence surveys were carried out at those buildings that were identified to have high to moderate potential.
- 2.4.401 Six buildings and/or structures identified to be at high risk of demolition were subject to emergence surveys. Eight buildings within 100m of land required for the construction of the Proposed Scheme were subject to an emergence survey.

Summary

- 2.4.402 Details of confirmed building roosts in this area of the route are provided in Table 149.
- 2.4.403 Following the full suite of surveys the results showed that overall there is a low density of building roosts within this area. Two buildings identified to at high risk of demolition have confirmed roosts. Seven buildings within 100m of land required for the construction of the Proposed Scheme have confirmed roosts.
- 2.4.404 None of the remaining buildings and bridges identified to be at high risk of demolition were found to have high potential to support roosting bats. Four buildings were found to have moderate potential to support roosting bats.
- 2.4.405 Two of the buildings within 100m of land required for the construction of the Proposed Scheme were found to have high potential to support roosting bats. Eight buildings were found to have moderate potential to support roosting bats

Table 149: Confirmed bat roosts in buildings/structures in CFA20

Ecology survey code	Location	OS grid reference	Building/ structure type	Species confirmed utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ¹⁶¹	Roost description	Distance from the land required for construction of the Proposed Scheme ¹⁶² (m)
030-BS1-182004	Building South of Darnford Lane, Whittington	SK 14905 08312	Residential	Common pipistrelle. (1)	17 July 2013 Emergence	T, D	Gaps under roof tiles/felt. Loose Flashing.	30m
030-BS1-182011	Building South of Darnford Lane, Lichfield	SK 14642 08382	Residential	Common pipistrelle (6) Brown long-eared (unknown)	24 July 2013 Internal inspection (droppings of long-eared bat found) Emergence	T, D	Gaps between roof timbers. Gaps allowing access to roof void. Numerous lifted ridge tiles and missing mortar. Slight gaps behind wooden fascias on new extensions.	55m
030-BS1-185003	Building near Streethay.	SK 14371 10834	Residential	Brown long-eared (1), common pipistrelle (6), soprano pipistrelle (1)	07 August 2013 Emergence	T, D	Roost within cavity walls. Gaps under roof tiles/felt. Gap right hand window lintel – missing mortar. Loose Flashing. Gap within wall rendering. Gap at apex. Gap along gable end between roof and bricks.	30m
030-BS1-188002	Building along Trent and Mersey Canal, East of Ravenshaw Wood	SK 12777 13515	Residential	Daubenton's (8) Brown long-eared bat (unknown)	29 June 2013 Internal inspections – (droppings of long-eared bat) Emergence	M	Gap between roof tile and roof membrane. Gap allowing access to roof void. Gap in mortar at gable apex.	10m
030-BS1-190003	Building South of Shaw Lane, Hanch	SK 10463 14346	Residential	Soprano pip. (1), brown long-eared (1)	04 September 2012 Emergence	T, D	Under fascia board at south gable end. Slightly to the right of the apex.	Within land required

¹⁶¹ Roost types for which feature is considered suitable coded as follows: T = Transitional roost; M = Maternity roost; S = Satellite roost; H = Hibernation roost, D = Day roost; F = Feeding roost; MAT = Mating roost, N = Night roost. Definitions as provided in Hundt L (2012), *Bat Surveys: Good Practice Guidelines 2nd edition*, Bat Conservation Trust.

¹⁶² Hereafter the term 'land required' is used as a shortened version of the full term 'land required for the construction of the Proposed Scheme'.

Ecology survey code	Location	OS grid reference	Building/ structure type	Species confirmed utilising roost and (peak count)	Date of peak count and nature of survey	Roost type ¹⁶¹	Roost description	Distance from the land required for construction of the Proposed Scheme ¹⁶² (m)
030-BS1-191004	Building North of Shaw Lane, Hanch	SK 10515 14470	Barn	Common pipistrelle (2)	08 August 2013 Emergence	T, D	Gaps between roof timbers. Gaps allowing access to roof void. Gaps under roof tiles/felt. Gaps in brickwork throughout building.	15m
030-BS1-191005	Building North of Shaw Lane, Hanch	SK10530 14484	Converted barn	Common pipistrelle (2)	08 August 2013 Re-entry	T	Gaps allowing access to roof void. Gaps under roof tiles/felt	15m
030-BS1-192009	Building along Chestnut Close, Handsacre, Rugeley	SK 09449 15260	Residential	Brown long-eared bat (unknown)	24 August 2012 Internal inspection – confirmed through DNA analysis of droppings only	T, M	Roost within internal loft adjoins in roofing felt, gaps under tiles, gaps in breezeblock walls. Roof cavities contain exposed roof timbers.	20m

Bat activity surveys

- 2.4.406 Nine transect routes have been surveyed within the land required for the construction of the Proposed Scheme in this area as shown in Table 163.
- 2.4.407 Two transect routes assessed bat activity within habitats around Whittington Heath Golf Course SBI and buildings south of Darnford Lane. Habitats included within the transect routes include areas of broadleaved woodland, amenity grassland, buildings and ponds. High quality areas of foraging and commuting bats outside of the route corridor include habitats associated with Whittington Heath Golf Course. The habitats within the transect routes have connectivity to confirmed roosts at buildings south of Darnford Lane. Habitat links along vegetated boundary features such as hedgerows enable dispersal of bat species between habitats of bat interest both within and outside of the land required for construction of the Proposed Scheme.
- 2.4.408 One transect route assessed bat activity within habitats associated with Fulfen Wood, Coventry Canal and Watery Bridge. Habitats included within the transect routes were dominated by agricultural land with hedgerows around field boundaries and two strips of woodland dividing fields. The habitats covered within the transect route are well connected through the Coventry Canal to habitats within the wider landscape. The habitats do not have strong connectivity to confirmed roosts although the roosts identified to the north and south are within 1km of the area. Further scattered buildings surveyed within the immediate environs of the habitats are only of low potential to provide roosting opportunities for bats.
- 2.4.409 One transect route assessed bat activity within habitats adjacent to Fradley Business Park, west of Wood End Lane. Habitats included within the transect routes include semi-improved grassland and broadleaved woodland. The habitats within the transect routes have connectivity to a confirmed roost associated with The a residential building near Streethay to the south and a number of buildings identified as providing low potential for roosting bats within Fradley Business Park. Habitat links along vegetated boundary features such as hedgerows and a ditch which leaves the area to the south enable dispersal of bat species between habitats of bat interest both within and outside of the land required for construction of the Proposed Scheme.
- 2.4.410 Three transect routes assessed bat activity using habitats associated with the Trent and Mersey Canal and adjacent woodlands (Ravenshaw Wood, Black Slough, the Slaish and Fradley Wood) Habitats included within the transect routes include broadleaved woodland and adjacent arable land with an associated pool. High quality areas of foraging and commuting bats outside of the route corridor include habitats associated with Pool Wood and Fradley Reservoir to the north-east, Vicar's Coppice and Tomhay Wood to the west and Curborough Hall to the south. The habitats within the transect routes have connectivity to confirmed roosts at a residential building, east of Ravenshaw Wood, adjacent to the Trent and Mersey Canal as well as scattered buildings which were identified as having moderate potential to support roosting bats. A large number of trees with moderate or high potential to provide roosting opportunities for bats have been identified within this area; five of which were confirmed as roosts within Ravenshaw Wood, Black Slough and the Slaish. The Trent and Mersey canal runs along the north-eastern edge of this area. Along with vegetated boundary features such as hedgerows, the canal enables dispersal of bat

species between habitats of bat interest both within and outside of the land required for construction of the Proposed Scheme.

- 2.4.411 Two transect routes assessed bat activity habitats fronting Shaw Lane and Tuppenhurst Lane including Bourne Brook, John's Gorse and Harvey's Rough. Habitats included within the transect routes include agricultural land with some hedgerow and poor semi-improved grassland with areas of broadleaved woodland. The habitats within the transect routes have connectivity to confirmed roosts at buildings along Shaw Lane. Habitat links along vegetated boundary features such as hedgerows and minor watercourses enable dispersal of bat species between habitats of bat interest both within and outside of the land required for construction of the Proposed Scheme.
- 2.4.412 One transect route assessed bats using habitats associated with the urban and arable habitats south-east of Handsacre between Lichfield Road and Tuppenhurst Road. The habitats are connected to a confirmed roost at a residential building within Handsacre along with a number of buildings which have high or moderate potential to support roosting bats associated with the same area of housing at Handsacre.
- 2.4.413 The following bat species have been recorded during the bat activity surveys conducted in support of the assessment in this area:
- common pipistrelle, soprano pipistrelle and *Myotis* species were found throughout the area. Noctule bat was recorded in all but two of the habitat areas with greatest numbers associated with habitats adjacent to Fradley Business Park and habitats including Ravenshaw Wood, Black Slough and the Slaish and the adjacent Trent and Mersey Canal. Records include both foraging and commuting bats and the numbers of passes recorded are consistent with regular use of these habitats for foraging or commuting purposes for all of these species;
 - brown long-eared bat was encountered in very small numbers in two of the landscape areas identified within this area. However, limitations of the acoustic survey methodology coupled with the acoustic characteristics of this species mean that it is likely to be highly under-recorded;
 - Daubenton's bat was confirmed in Ravenshaw Wood, Black Slough and the Slaish and along the adjacent Trent and Mersey Canal. Other *Myotis* species throughout the remainder of transect surveys within this area were recorded to genus level only; and
 - Leisler's bat and serotine were recorded associated with habitats including: Ravenshaw Wood, Black Slough and the Slaish and the Trent and Mersey Canal; and habitats around Whittington Heath Golf Course and habitats surrounding Ellfield House. Only a very small number of passes were recorded for these species indicating passage or transient use rather than core foraging habitat.
- 2.4.414 Some calls recorded were unable to be identified to species level and encounters with *Myotis* species, *Nyctalus* species and *Pipistrellus* species have also been recorded.

2.4.415 A summary of the results of the transect surveys are provided in Table 151 to Table 161.

Table 150: Bat activity surveys conducted within CFA22

Ecology survey code	Transect Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA1-181001	Whittington Heath Golf Course	19	13 June 2012	07 August 2013	EC-06-123b, D7
030-BA1-182001	Land associated with buildings south of Darnford Lawn	11	16 July 2012	09 May 2013	EC-06-124, H5
030-BA1-183001	Land at Fulfen Wood	4	10 July 2013	07 August 2013	EC-06-125, H4
030-BA1-186001	commuting and foraging habitats adjacent to Fradley Business Park, west of Wood End Lane	12	25 July 2012	11 June 2013	EC-06-126, F2
030-BA1-186002	commuting and foraging habitats adjacent to Fradley Business Park, west of Wood End Lane	11	25 June 2012	04 June 2013	EC-06-127, I5
030-BA1-187001	Habitats associated with Trent and Mersey Canal and adjacent woodlands	6	03 July 2012	06 August 2013	EC-06-127, D3
030-BA1-188001	Habitats associated with Trent and Mersey Canal and adjacent woodlands	15	18 June 2012	08 August 2013	EC-06-128, E7
030-BA1-189001	Habitats associated with Trent and Mersey Canal and adjacent woodlands	16	18 June 2012	13 August 2013	EC-06-129, H7
030-BA1-190001	Land fronting Shaw Lane and Tuppenhurst Lane	17	18 June 2012	07 August 2013	EC-06-129, F6
030-BA1-190002	Land fronting Shaw Lane and Tuppenhurst Lane	5	26 June 2012	06 August 2013	EC-06-129, D7
030-BA1-192001	Land on the south east of Handsacre	9	24 April 2013	13 August 2013	EC-06-130, F6

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Table 151: Summary of transect survey results for 030-BA1-181001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-181001	Whittington Heath Golf Course				Golf course. Areas of broadleaf woodland around amenity grassland and buildings to south.																
Visit number and date	Weather conditions				Total species passes during transect survey ¹⁶³																
	Temp (°C)	Cloud (0-8) ¹⁶⁴	Rain (0-5) ¹⁶⁵	Wind (0-12) ¹⁶⁶	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: 13 June 2012	12	8	1	2	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: 14 June 2012	12	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: 11 July 2012	13.2/9	2-3	0	0-1	6	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 4: 07 August 2012	11	7	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: 11 September 2012	13	6	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: 12 September 2012	7	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: 25 September 2012	10	8	1	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: 26 September 2012	9	8	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 9: 05 October 2012	12.3	8	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 10: 15 October 2012	9.1	8	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 11: 16 October 2012	8	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 12: 24 October 2012	12.1/11.8	8	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 13: 16 April 2013	11	8	4	4	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 14: Dusk 07 May 2013	17	2	0	0	22	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	3

¹⁶³ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

¹⁶⁴ Cloud cover on a scale of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky completely cloudy.

¹⁶⁵ Precipitation intensity on scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain.

¹⁶⁶ Wind speed score of 0-12 against Beaufort scale where 0 = calm, 2 = light breeze, 4 = Moderate breeze, 6 = strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-181001	Whittington Heath Golf Course				Golf course. Areas of broadleaf woodland around amenity grassland and buildings to south.																
Visit number and date	Weather conditions				Total species passes during transect survey ¹⁶³																
	Temp (°C)	Cloud (0-8) ¹⁶⁴	Rain (0-5) ¹⁶⁵	Wind (0-12) ¹⁶⁶	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Es
Visit 15: Dawn 08 May 2013	13	4	0	2	9	2	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
Visit 16: 24 July 2013	16	1	0	1	20	7	0	0	0	0	0	0	0	0	1	0	0	2	1	1	0
Visit 17: 25 July 2013	14	2	1	1	7	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 18: 06 August 2013	10	0	0	1	15	1	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0
Visit 19: 07 August 2013	9	4	0	1	7		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Table 152: Summary of transect survey results for 030-BA1-182001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-182001	Land associated with buildings south of Darnford Lane				Amenity grassland to south; buildings and pond to north.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: 16 July 2012	15.2	6-8	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: 07 August 2012	15	7	0	2	4	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 3: 17 August 2012	16.2	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: 06 September 2012	15	1	0	1	8	1	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0
Visit 5: 07 September 2012	12	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: 15 October 2012	9.2	8	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: 24 October 2012	12.4	8	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: 16 April 2013	11	4	0	6	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 9: 17 April 2013	12	6	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 10: Dusk 08 May 2013	8	1	0	2	1	2	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0
Visit 11: Dawn 09 May 2013	6	1	0	2	1	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0

Table 153: Summary of transect survey results for 030-BA1-183001

Ecology survey code	Transect location				Description of habitats covered by transect																	
030-BA1-183001	Land at Fulfen Wood				Agricultural land with hedgerows around field boundaries and two strips of woodland dividing fields.																	
Visit number and date	Weather conditions				Total species passes during transect survey																	
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/ Es	
Visit 1: Dusk 10 July 2013	21.2	8	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 2: Dawn 11 July 2013	14.8	7	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 3: Dusk 06 August 2013	21.7	1	0	0-1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 4: Dawn 07 August 2013	14.6	7	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

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Table 154: Summary of transect survey results for 030-BA1-186001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-186001	commuting and foraging habitats adjacent to Fradley Business Park, west of Wood End Lane				Semi-improved grassland; broadleaved woodland.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: 25 July 2012	23	0	0	2	5	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0
Visit 2: 14 August 2012	21	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 3: 15 August 2012	17	7	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: 05 September 2012	8-6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: 17 October 2012	13/11	3	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: 18 October 2012	10	2/3	0	2/1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: 23 April 2013	13	1	0	0-1	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: 24 April 2013	9	3	0	0		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 9: 20 May 2013	15	8	0	3	3	4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Visit 10: 27 May 2013	12	7	0	2	4	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 11: 10 June 2013	12.6	3	0	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 155: Summary of transect survey results for 030-BA1-186002

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-186002	commuting and foraging habitats adjacent to Fradley Business Park, west of Wood End Lane				Large building to north of site with amenity land around; to south arable land including pond.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: 25 July 2012	23	1	0	0-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: 14 August 2012	21	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: 15 August 2012	17	1/7	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: 18 August 2012	13.5/11.7	8/4	0-1	0-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: 04 September 2012	14.9	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: 23 April 2013	14	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: 24 April 2013	9	7	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: 13 May 2013	8	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 9: 14 May 2013	5	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 10: 03 June 2013	19	0	0	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 11: 04 June 2013	10	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Table 156: Summary of transect survey results for 030-BA1-187001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-187001	Habitats associated with Trent and Mersey Canal and adjacent woodlands				Mature broadleaved woodland edge and hedgerows.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: 03 July 2013	17.5	5	0	0	5	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: 04 July 2013	11.5	2	0	1	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: 15 July 2013	20.9	8	0	0	12	9	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
Visit 4: 16 July 2013	13.8	4	0	0	5	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Visit 5: 05 August 2013	21	5	0	5	7	10	0	0	0	0	0	0	0	0	2	0	0	1	0	1	0
Visit 6: 06 August 2013	14	2	0	2	3	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1

Table 157: Summary of transect survey results for 030-BA1-188001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-188001	Habitats associated with Trent and Mersey Canal and adjacent woodlands				Agricultural pasture and woodland.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: Dusk 18 June 2012	15	1	0	2	9	7	0	0	0	2	0	0	0	0	9	0	0	0	0	2	0
Visit 2: Dusk 28 August 2012	14.8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 3: Dawn 29 August 2012	15.4	7	0	2	5	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Visit 4: 13 September 2012	14.3	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: 17 October 2012	12	1	0	0-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: 24 April 2013	15	8	0	1	13	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: 25 April 2013	10	8	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: 15 May 2013	10	2	0	0	5	11	0	0	0	0	0	0	0	0	0	1		0	0	0	0
Visit 9: 16 May 2013	4	0	0	0	1	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Visit 10: 05 June 2013	11.7	0	0	0	7	4	0	0	0	0	0	0	0	0	2	2	0	2	0	0	0
Visit 11: 06 June 2013	10.2	8	0	1	5	8	0	0	0	0	0	0	0	0	5	1	0	0	0	0	0
Visit 12: 08 July 2013	20.8	8	0	0	3	5	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 13: 09 July 2013	10.3	0	0	0	2	3	0	0	0	0	0	0	0	0	1	0	0	2	1	0	0
Visit 14: 07 August 2013	19	1	0	0	1	5	0	0	0	0	0	0	0	0	5	2	0	0	0	0	0
Visit 15: 08 August 2013	9	0	0	0	1	7	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0

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Table 158: Summary of transect survey results for 030-BA1-1890001

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-189001	Habitats associated with Trent and Mersey Canal and adjacent woodlands				Broadleaved woodland and adjacent arable land; pool within arable land.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es
Visit 1: 18 June 2012	15	2	0	2	22	6	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0
Visit 2: 18 July 2012	17	4	0	2	5	1	0	0	0	1	0	0	0	0	7	0	0	0	2	0	0
Visit 3: 15 August 2012	16	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 4: 16 August 2012	14	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: 30 September 2012	13	8	2	2-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 6: 01 October 2012	12	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 7: 12 October 2012	10	8	0	5-6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 8: 29 April 2013	9	4	0	0	0	5	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Visit 9: 21 May 2013	10.5	8	0	0-1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0
Visit 10: 22 May 2013	8	7	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 11: 10 June 2013	12.3	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 12: 11 June 2013	10.1	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 13: 09 July 2013	24.8	3	0	0	3	5	0	0	0	0	0	0	0	0	3	0	0	1	3	0	0
Visit 14: 10 July 2013	15.4	4	0	0		5	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0
Visit 15: 12 August 2013	15	2	0	2.3	2	1	0	0	0	0	0	0	0	0	3	2	0	1	2	0	0
Visit 16: 13 August 2013	12	0	0	1	4	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0

Table 159: Summary of transect survey results for 030-BA1-190001

Ecology survey code	Transect location				Description of habitats covered by transect																	
030-BA1-190001	Land fronting Shaw Lane and Tuppenhurst Lane				Agricultural land with some hedgerows; neighbouring land to south and south-east contains woodland, and to north is Kings Bromley Wharf Marina.																	
Visit number and date	Weather conditions				Total species passes during transect survey																	
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/ Es	
Visit 1: 18 June 2012	14	4	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 2: 19 July 2012	13	7	0	3	3	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	
Visit 3: 13 August 2012	17	2	0	0-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 4: 14 August 2012	14	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 5: 17 September 2012	13.7	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 6: 18 September 2012	8.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 7: 12 October 2012	10/9	8	1/0	4/2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 8: 24 April 2013	14	7	0	2	10	6	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	
Visit 9: 25 April 2013	11	8	0	0-1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 10: 04 June 2013	12.9	1	0	1	7	4	0	0	0	0	0	0	0	0	2	2	0	1	0	0	0	
Visit 11: 05 June 2013	11.9	8	0	0-1	3	3	0	0	0	0	0	0	0	0	3	1	0		0	0	0	
Visit 12: 16 July 2013	21.7	2/8	0	0	5	2	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	
Visit 13: 17 July 2013	15.8	2/8	0	0	2	0	0	0	0	0	0	0	0	0	4	0	0	3	0	0	0	
Visit 14: 22 July 2013	28	8	0	0	5	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 15: 23 July 2013	21.3	7	0-4	1	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 16: 06 August 2013	18	1	0	1	7	5	0	0	0	0	0	0	0	0	4	1	0	1	0	0	0	
Visit 17: 07 August 2013	13.7	5	0	0	3	3	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	

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Table 160: Summary of transect survey results for 030-BA1-190002

Ecology survey code	Transect location				Description of habitats covered by transect																
030-BA1-190002	Land fronting Shaw Lane and Tuppenhurst Lane				Poor semi-improved grassland with areas of broadleaved woodland.																
Visit number and date	Weather conditions				Total species passes during transect survey																
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Es
Visit 1: 26 June 2012	18	5	0	2	12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 2: 22 July 2013	20	3	0	0	9	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
Visit 3: 23 July 2013	18	7	2	0	3	0	0	0	0	0	0	0	0	0	1	3	0	2	0	0	0
Visit 4: 05 August 2013	13	2	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visit 5: 06 August 2013	13	0	0	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0

Table 161: Summary of transect survey results for 030-BA1-192001

Ecology survey code	Transect location				Description of habitats covered by transect																	
030-BA1-192001	Land on the south east of Handsacre				Arable land bordered by hedgerow with houses to north, road to west and railway to east.																	
Visit number and date	Weather conditions				Total species passes during transect survey																	
	Temp (°C)	Cloud (0-8)	Rain (0-5)	Wind (0-12)	Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/ Es	
Visit 1: Dusk 24 April 2013	13/13.1	8	0	0	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 2: Dawn 25 April 2013	11.5	8	0	1	2	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
Visit 3: Dusk 22 May 2013	10	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 4: Dusk 11 June 2013	15	2	0	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 5: Dawn 12 June 2013	13	3	1/2	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 6: Dusk 22 July 2013	24	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 7: 23 Dawn July 2013	19	7	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 8: Dusk 12 August 2013	12	3	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Visit 9: Dawn 13 August 2013	10	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Static detectors

- 2.4.416 A total of 16 static surveys have been completed within this area as shown in Table 162. Twelve of these locations used SM2+ BAT detectors whilst the remaining four used Anabat SD1 detectors.
- 2.4.417 A broad range of habitats was encompassed by the static surveys and were prominently associated with each of the transect survey routes. The statics associated with transects were as follows:
- two statics were located within habitats around Whittington Heath Golf Course and habitats surrounding buildings south of Darnford Lane. The surveys assessed activity along two tree lines within the golf course;
 - three statics were located within habitats associated with Fulfen Wood, Coventry Canal and Watery Bridge. The surveys assessed activity along a hedgerow and over an area of wasteland. One static surveyed activity along a field edge close to a stream and woodland;
 - two statics were located within habitats adjacent to Fradley Business Park. The surveys assessed activity along hedgerows beside arable fields or pasture fields, on woodland edges with pasture field, arable fields or the canal, and within a mature deciduous woodland;
 - seven statics assessed bat activity within habitats associated with the Trent and Mersey Canal and adjacent woodlands (Ravenshaw Wood, Black Slough, the Slaish and Brokendown, Fradley Gorse and Fradley Wood);
 - two statics were located within habitats fronting Shaw Lane and Tuppenhurst Lane including Bourne Brook, John's Gorse and Harvey's Rough; and
 - one static was located within arable habitats south-east of Handsacre between Lichfield Road and Tuppenhurst Road.
- 2.4.418 A further statics was located along Wyrley and Essington Canal.
- 2.4.419 The results of the static surveys are provided in Table 163 to Table 180.

Table 162: Bat static surveys conducted within CFA22

Ecology survey code	Static Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA2-181001	Whittington Heath Golf Course	7	24 May 2012	12 June 2013	EC-06-123b, E6
030-BA2-182001	Whittington Heath Golf Course	3	15 April 2013	12 June 2013	EC-06-123b, B6
030-BA2-183001	Wyrley and Essington Canal	4	23 May 2013	12 August 2013	EC-06-124, D6
030-BA2-183002	Land at associated with Fulfen Wood	5	19 April 2013	13 August 2013	EC-06-124, A7
030-BA2-183003	Land at associated with Fulfen Wood	4	28 May 2013	13 August 2013	EC-06-124, C6

Ecology survey code	Static Location	Number of surveys conducted	First survey date	Final survey date	Map reference
030-BA2-186001	Land and buildings at Fradley Business Park	9	25 July 2012	13 August 2013	EC-06-126, A4
030-BA2-186002	Fradley South Business Park	7	25 July 2012	17 June 2013	EC-06-126, E2
030-BA2-187001	Woodland habitat associated with the Trent and Mersey Canal	2	04 July 2013	09 August 2013	EC-06-127, D5
030-BA2-188001	Ravenshaw Wood	5	18 April 2013	12 August 2013	EC-06-127, C5
030-BA2-188002	Habitats along the Trent and Mersey Canal	1	24 July 2013	31 July 2013	EC-06-128, H5
030-BA2-188003	Ravenshaw Wood	7	28 June 2012	18 June 2013	EC-06-128, H6
030-BA2-189001	Land associated with Black Slough	7	14 September 2012	13 August 2013	EC-06-128, F6
030-BA2-189002	Land associated with Black Slough	7	14 September 2012	13 August 2013	EC-06-128, F7
030-BA2-189003	Black Slough	5	21 April 2013	13 August 2013	EC-06-128, E5
030-BA2-189004	Black Slough	7	28 June 2012	18 June 2013	EC-06-128, C6
030-BA2-190001	Habitats associated with Bourne Brook	9	25 July 2012	14 August 2013	EC-06-129, F7
030-BA2-191001	Habitats fronting Shaw Lane and Tuppenhurst Lane including Bourne Brook, John's Gorse and Harvey's Rough	2	04 July 2013	09 August 2013	EC-06-129, C6
030-BA2-192001	Arable land south east of Handsacre	3	18 April 2013	04 June 2013	EC-06-130, F6

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Table 163: Summary of static detector survey results for 030-BA2-181001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-181001	Whittington Heath Golf Course	SK 14804 07305	Oak tree in tree line at gap where pathway in surrounding habitat in amenity grassland (golf course).															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁶⁷ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
24 May 2012 – 31 May 2013	7	878	185	0	0	0	0	0	0	0	0	69	0	0	55	11	10	0
01 June 2012 – 16 June 2013	15	282	94	0	0	0	0	0	0	0	0	12	0	0	16	0	0	0
23 July 2012 – 29 July 2013	6	91	22	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0
23 October 2012 – 02 November 2012	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 April 2013 – 24 April 2013	9	185	47	0	0	0	0	0	0	0	0	2	0	0	4	0	0	0

¹⁶⁷ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 164: Summary of static detector survey results for 030-BA2-182001

Ecology survey code	Location	OS Grid			Description of habitat													
030-BA2-182001	Whittington Heath Golf Course	SK 14784 07961			Oak tree at edge of tree line adjacent to amenity grassland-golf course.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁶⁸ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
15 April 2013 – 24 April 2013	9	42	47	1	0	0	0	0	0	0	0	2	0	0	1	1	0	0

¹⁶⁸ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 165: Summary of static detector survey results for 030-BA2-183001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-183001	Wyrley and Essington Canal	SK 14777 08994	Rough scrub stream bank separating stream from adjacent improved grassland.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁶⁹ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
23 May 2013 – 30 June 2013	7	4	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
15 July 2013 – 22 July 2013	7	27	9	0	0	0	0	0	0	0	0	3	0	0	5	2	2	0
05 August 2013 – 12 August 2013	7	5	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0

¹⁶⁹ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 166: Summary of static detector survey results for 030-BA2-183002

Ecology survey code	Location	OS Grid			Description of habitat													
030-BA2-183002	Land at associated with Fulfen Wood	SK 14617 09583			Arable, hedgerow, mature trees.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁷⁰ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
19 April 2013 – 25 April 2013	6	4	2	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0
15 May 2013 – 25 May 2013	9	32	11	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
01 June 2013 – 04 June 2013	3	10	32	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
15 July 2013 – 22 July 2013	7	75 ⁶	374	0	0	0	0	0	0	0	0	8	0	0	2	3	1	0
06 August 2013 – 13 August 2013	7	27	16	0	0	0	0	0	0	0	0	3	0	0	1	1	0	0

¹⁷⁰ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 167: Summary of static detector survey results for 030-BA2-183003

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-183003	Land at associated with Fulfen Wood	SK 14780 09169	Part way up small bank with semi improved grassland, facing used canal, lined with scattered broadleaf trees.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁷¹ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
28 May 2013 – 04 June 2013	7	331	76	0	0	0	0	0	0	0	0	10	0	0	8	2	0	0
25 June 2013 – 02 July 2013	7	84	125	0	0	0	0	0	0	0	0	7	0	0	4	8	0	0
16 July 2013 – 23 July 2013	7	273	301	0	0	0	0	0	0	0	0	25	1	0	7	7	0	0

¹⁷¹ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 168: Summary of static detector survey results for 030-BA2-186001

Ecology survey code	Location	OS Grid				Description of habitat												
030-BA2-186001	Land and buildings at Fradley Business Park	SK 13907 12481				Hedgerow.												
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁷² (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
25 July 2012 – 31 July 2012	6	7	4	0	0	0	0	0	0	0	0	1	0	0	1168	5	0	43
03 August 2012 – 12 August 2012	9	44	25	0	0	0	0	0	0	0	0	11	2	0	4	4	3	0
14 September 2012 – 21 September 2012	7	11	8	2	0	0	0	0	0	0	0	1	0	0	7	1	0	0
19 October 2012 – 24 October 2012	5	3	0	0	0	0	0	0	0	0	0	0	0	0	53	10	0	0
21 April 2013 – 28 April 2013	7	2	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
15 May 2013 – 22 May 2013	7	2	3	1	0	0	0	0	0	0	0	0	0	0	67	2	0	0
10 June 2013 – 17 June 2013	7	8	3	0	0	0	0	0	0	0	0	0	0	0	48	14	0	0
09 July 2013 – 16 July 2013	7	41	5	0	0	0	0	0	0	0	0	0	0	0	334	4	0	0
06 August 2013 – 13 August 2013	7	50	14	0	0	0	0	0	0	0	0	1	0	0	29	2	0	0

¹⁷² Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 169: Summary of static detector survey results for 030-BA2-186002

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-186002	Fradley South Business Park	SK 14338 11761	Scrubby wasteland.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁷³ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
25 July 2012 – 01 August 2012	7	329	124	0	14	0	0	0	0	0	0	8	1	0	2	1	0	0
01 August 2012 – 11 August 2012	10	656	48	1	7	0	0	0	0	0	0	18	0	0	3	0	0	2
13 September 2012 – 21 September 2012	8	8	55	0	2	0	0	0	0	0	0	38	0	0	2	0	0	0
22 October 2012 – 29 October 2012	7	8	15	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0
21 April 2013 – 28 April 2013	7	10	15	0	0	0	0	0	0	0	0	4	0	0	1	0	0	0
15 May 2013 – 22 May 2013	7	24	31	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0
10 June 2013 – 17 June 2013	7	20	59	0	0	0	0	0	0	0	0	8	0	0	0	1	0	0

¹⁷³ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 170: Summary of static detector survey results for 030-BA2-187001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-187001	Woodland habitat associated with the Trent and Mersey Canal	SK 13402 13377	Northern hedge of arable field, next to woodland.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁷⁴ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
04 July 2013 – 11 July 2013	7	30	108	0	0	0	0	0	0	0	0	17	0	0	7	2	0	0
01 August 2013 – 09 August 2013	8	69	226	0	0	0	0	0	0	0	0	7	0	0	3	16	0	0

¹⁷⁴ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 171: Summary of static detector survey results for 030-BA2-188001

Ecology survey code	Location	OS Grid				Description of habitat													
030-BA2-188001	Ravenshaw Wood	SK 13296 13440				Broad-leaved woodland, canal.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁷⁵ (the highest number of bat passes recorded on any one night during deployment)																	
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep	
18 April 2013 – 24 April 2013	7	163	281	0	0	0	0	0	0	0	0	3	0	0	1	1	0	0	
15 May 2013 – 22 May 2013	8	784	756	0	0	0	0	0	0	0	0	1680	1	0	3	4	1	0	
01 June 2013 – 10 June 2013	10	419	504	0	0	0	0	0	0	0	0	404	0	0	1	4	0	0	
04 July 2013 – 11 July 2013	8	169	588	0	0	0	0	0	0	0	0	278	0	0	1	3	0	0	
05 August 2013 – 12 August 2013	7	522	1473	2	0	0	0	0	0	0	0	75	0	0	1	2	3	0	

¹⁷⁵ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 172: Summary of static detector survey results for 030-BA2-188002

Ecology survey code	Location	OS Grid			Description of habitat													
030-BA2-188002	Habitats along the Trent and Mersey Canal	SK 12714 13690			Next to canal.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁷⁶ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
24 July 2013 – 31 July 2013	7	23	34	0	0	0	0	0	0	0	0	7	0	0	2	0	0	0

¹⁷⁶ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 173: Summary of static detector survey results for 030-BA2-188003

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-188003	Ravenshaw Wood	SK 12536 13639	Anabat in mature oak, on edge of deciduous woodland, adjacent to corner between wet and dry ditches, which separate woodland from adjacent arable farmland.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁷⁷ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
28 June 2012 – 04 July 2012	6	5	12	0	0	0	0	0	0	0	0	37	0	0	6	1	0	0
23 July 2012 – 29 July 2012	3	1	3	0	0	0	0	0	0	0	0	8	0	0	8	0	0	0
31 August 2012 – 10 September 2012	10	31	128	0	13	0	0	0	0	0	0	13	1	0	1	0	0	2
18 October 2012 – 24 October 2012	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 April 2013 – 03 May 2013	7	4	21	0	0	0	0	0	0	0	0	2	0	0	3	0	0	0
16 May 2013 – 23 May 2013	7	224	13	0	0	0	0	0	0	0	0	6	0	0	13	5	0	0

¹⁷⁷ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 174: Summary of static detector survey results for 030-BA2-189001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-189001	Land associated with Black Slough	SK 12309 13740	Woodland/pasture edge.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁷⁸ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
14 September 2012 – 20 September 2012	6	64	913	5	2	0	0	0	0	0	0	20	0	0	4	0	0	12
17 October 2012 – 24 October 2012	7	104	580	1	0	0	0	0	0	0	0	23	0	0	11	17	1	0
21 April 2013 – 28 April 2013	7	767	240	0	0	0	0	0	0	0	0	110	0	0	0	1	0	0
15 May 2013 – 22 May 2013	7	271	351	0	0	0	0	0	0	0	0	20	0	0	2	2	3	0
10 June 2013 – 17 June 2013	7	126	348	0	0	0	0	0	0	0	0	45	0	0	2	3	0	0
09 July 2013 – 16 July 2013	7	17	225	0	0	0	0	0	0	0	0	12	1	0	6	3	0	0
06 August 2013 – 13 August 2013	7	193	445	0	0	0	0	0	0	0	0	22	0	0	4	11	0	0

¹⁷⁸ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 175: Summary of static detector survey results for 030-BA2-189002

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-189002	Land associated with Black Slough	SK 12155 13684	Pasture land and inter-connecting hedge.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁷⁹ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
14 September 2012 – 20 September 2012	6	472	224	3	6	0	0	0	0	0	0	37	0	0	13	0	0	81
17 October 2012 – 24 October 2012	7	18	22	0	0	0	0	0	0	0	0	2	0	0	1	36	1	0
21 April 2013 – 28 April 2013	7	746	233	0	0	0	0	0	0	0	0	107	0	0	1	1	0	0
15 May 2013 – 22 May 2013	7	78	112	0	0	0	0	0	0	0	0	11	0	0	1	2	0	0
10 June 2013 – 17 June 2013	7	536	134	0	0	0	0	0	0	0	0	55	0	0	0	4	0	0
09 July 2013 – 16 July 2013	7	16	57	0	0	0	0	0	0	0	0	17	0	0	4	4	0	0
06 August 2013 – 13 August 2013	7	422	143	0	0	0	0	0	0	0	0	42	0	0	5	8	0	0

¹⁷⁹ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 176: Summary of static detector monitoring results for 030-BA2-189003

Ecology survey code	Location	OS Grid			Description of habitat													
030-BA2-189003	Black Slough	SK 12126 13928			Pasture/woodland – 100m canal.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁸⁰ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
21 April 2013 – 28 April 2013	7	328	241	0	0	0	0	0	0	0	0	19	2	0	3	2	0	0
15 May 2013 – 22 May 2013	7	256	119	0	0	0	0	0	0	0	0	24	0	0	3	3	0	0
10 June 2013 – 17 June 2013	7	20	255	0	0	0	0	0	0	0	0	20	0	0	4	1	0	0
09 July 2013 – 16 July 2013	7	17	70	0	0	0	0	0	0	0	0	23	0	0	6	1	0	0
06 August 2013 – 13 August 2013	7	25	112	0	0	0	0	0	0	0	0	24	0	0	1	1	0	0

¹⁸⁰ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 177: Summary of static detector survey results for 030-BA2-189004

Ecology survey code	Location	OS Grid			Description of habitat													
030-BA2-189004	Black Slough	SK 11662 13884			Mature oak tree in mature deciduous woodland separated from adjacent arable land by ditch.													
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁸¹ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	Nl	Es	Ny/Ep
28 June 2012 – 04 July 2012	6	143	374	0	4	0	0	0	0	0	0	346	15	0	7	1	17	1
23 July 2012 – 29 July 2012	6	0	5	0	0	0	0	0	0	0	0	2	0	0	3	0	0	0
31 August 2012 – 8 September 2012	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 October 2012 – 24 October 2012	7	27	170	0	0	0	0	0	0	0	0	27	0	0	3	0	0	1

¹⁸¹ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, Nl – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 178: Summary of static detector survey results for 030-BA2-190001

Ecology survey code	Location	OS Grid				Description of habitat												
030-BA2-190001	Habitats associated with Bourne Brook	SK 10832 14142				Field edge, stream, and woodland.												
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁸² (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
25 July 2012 – 31 July 2012	6	1	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
31 July 2012 – 10 August 2012	10	55	27	0	4	0	0	0	0	0	0	60	0	0	6	0	0	4
14 September 2012 – 20 September 2012	6	70	330	0	12	0	0	0	0	0	0	297	0	0	0	15	0	2
17 October 2012 – 24 October 2012	7	1356	142	3	0	0	0	0	0	0	0	14	0	0	1	1	0	0
21 April 2013 – 28 April 2013	7	597	159	0	0	0	0	0	0	0	0	11	0	0	3	5	0	0
15 May 2013 – 22 May 2013	7	150	46	0	0	0	0	0	0	0	0	54	0	0	2	2	0	0
10 June 2013 – 17 June 2013	7	134	44	0	0	0	0	0	0	0	0	94	0	0	17	8	0	0
04 July 2013 – 16 July 2013	12	34	22	0	0	0	0	0	0	0	0	38	0	0	8	8	1	0

¹⁸² Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

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Table 179: Summary of static detector survey results for 030-BA2-191001

Ecology survey code	Location	OS Grid		Description of habitat														
030-BA2-191001	Habitats fronting Shaw Lane and Tuppenhurst Lane including Bourne Brook, John’s Gorse and Harvey’s Rough	SK 10130 14445		Arable land (strawberry farm, poly tunnels) and broad-leaved woodland.														
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁸³ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
04 July 2013 – 11 July 2013	7	10	11	0	0	0	0	0	0	0	0	1	0	0	9	1	0	0
01 August 2013 – 09 August 2013	8	18	25	0	0	0	0	0	0	0	0	4	0	0	4	3	1	0

¹⁸³ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Table 180: Summary of static detector survey results for 030-BA2-192001

Ecology survey code	Location	OS Grid	Description of habitat															
030-BA2-192001	Arable land south east of Handsacre	SK 09747 15073	Within hedgerow, close to railway, next to arable field.															
Date (night monitoring commenced to night monitoring ceased)	Number of nights detector deployed	Species peak night count during monthly monitoring ¹⁸⁴ (the highest number of bat passes recorded on any one night during deployment)																
		Pp	Ppy	Pn	P sp.	Mb	Md	Mn	Mm	Mbr	Mm/ Mb	M sp.	Pa	Bb	Nn	NI	Es	Ny/Ep
18 April 2013 – 25 April 2013	7	370	35	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0
15 May 2013 – 23 May 2013	9	200	71	0	0	0	0	0	0	0	0	88	0	0	2	2	1	0
01 June 2013 – 04 June 2013	3	152	59	0	0	0	0	0	0	0	0	14	0	0	2	3	0	0

¹⁸⁴ Pp – common pipistrelle, Ppy – soprano pipistrelle, Pn – Nathusius' pipistrelle, P sp. – Pipistrelle bat species, Mb – Bechstein's bat, Md – Daubenton's bat, Mn – Natterer's bat, Mm – whiskered bat, Mbr – Brandt's bat, Mm/Mb – whiskered/Brandt's bat, M sp – *Myotis* bat species, Pa – brown long-eared bat, Bb – barbastelle bat, Nn – noctule bat, NI – Leisler's bat, Es – serotine bat, Ny/Ep – *Nyctalus/Eptesicus* bat.

Back tracking

- 2.4.420 Backtracking surveys were undertaken within Ravenshaw Wood, Black Slough and the Slaish within 2012. Surveys confirmed the presence of a small summer (non-breeding) soprano pipistrelle roost within the land required for the construction of the Proposed Scheme at Black Slough.

Discussion

- 2.4.421 Information from SER has identified the presence of a minimum of eight species of bat within 10km of the route of the Proposed Scheme within this area, six of which were confirmed during field surveys; soprano pipistrelle, brown long-eared bat, noctule, Daubenton's, Natterer's, and Leisler's. Common pipistrelle was also confirmed during surveys but no records with 10km of the route of the Proposed Scheme within this area were provided. Nathusius' pipistrelle and serotine bat were also recorded during the surveys although no records for this species were provided by SER.
- 2.4.422 The habitats present within areas where access for field surveys was not permitted were predominantly arable and pasture fields with hedgerows and other field boundaries; these habitat types were well represented within transect and static surveys throughout the remainder of the land required for construction of the Proposed Scheme within this area.
- 2.4.423 The transect and static surveys conducted in 2012 and 2013 were distributed to encompass a wide range of habitats representative of those present within the area including arable habitat which is the dominant habitat type. Other habitat types surveyed include small parcels of woodlands, areas of scrub and bracken, arable fields, canals, ponds, semi-improved and improved grasslands.
- 2.4.424 The static and transect surveys identified common and soprano pipistrelle as the most abundant species within the area which is to be expected given the status of these species. Daubenton's bat and unidentified *Myotis* species were recorded occasionally during activity surveys along with a number of noctule and brown long-eared bats. Leisler's and serotine bats were identified, associated predominantly with the more wooded habitats and occasional Nathusius' pipistrelle records indicate passage or transient use of habitats rather than core foraging or commuting habitat use.
- 2.4.425 The majority of the desk study records relate to bats recorded via field observations and bat detectors, with a number of possible roost sites (no information provided) of brown long-eared bat (seven potential roosts), Natterer's (one potential roost) soprano pipistrelle (one potential roost) and a *Pipistrellus* species (one potential roost), as well as two records of unidentified species roosts. Roost sites are typically associated with nearby settlements including Lichfield, Streethay, Fradley, and Rugeley and surrounding villages. Field records for common pipistrelle at Streethay, brown long-eared bat near the Trent and Mersey Canal and *Pipistrellus* species at Streethay are located within 100m of the land required for construction of the Proposed Scheme. Brown long-eared bats were infrequently recorded although the constraints of the acoustic survey methodology, coupled with the call characteristics of the species suggest that they are likely to be under-recorded. Roost sites for this species were confirmed within this area.

- 2.4.426 The assemblage of species recorded is consistent with the desk study records. A total of seven/eight species are recorded as present within 10km either side of the proposed route within this area from desk study records. Only whiskered and Brandt's bat have not been identified during the surveys conducted in 2012/2013. This may be due to limitations of the acoustic survey technique in the absence of finding a roost site; DNA analysis of droppings is the most reliable way to differentiate these species from other similar *Myotis* species. The surveys conducted in 2012/13 identified Leisler's, serotine and Nathusius' pipistrelle which were not provided in desk study records within 10km of the route of the Proposed Scheme within this area.
- 2.4.427 The habitats within the Whittington to Handsacre area which were assessed for roosting, commuting and foraging bat activity have been split into the following six sections, south to north, for the purposes of discussion:
- habitats around Whittington Heath Golf Course and habitats surrounding Ellfield House;
 - habitats along the Wyrley and Essington Canal;
 - habitats between Huddlesford and the A38 including Fulfen Wood, Coventry Canal and Watery Bridge;
 - habitats adjacent to Fradley Business Park, west of Wood End Lane;
 - foraging and commuting habitats associated with Trent and Mersey Canal and adjacent woodlands (Ravenshaw Wood, Black Slough, the Slaish and Fradley Wood) Habitats fronting Shaw Lane and Tuppenhurst Lane including Bourne Brook, John's Gorse and Harvey's Rough; and
 - habitats at land to the south of Handsacre, between Lichfield Road and Tuppenhurst Lane.
- 2.4.428 Transects and static detector surveys of habitats around Whittington Heath Golf Course SBI and buildings south of Darnford Lane, identified foraging and commuting by common and soprano pipistrelle and occasional brown long-eared bat as well as relatively lower numbers of noctule and *Myotis* species. A small number of passes by Nathusius' pipistrelle, Leisler's and serotine indicate passage or transient use of the habitats rather than core foraging or commuting habitat. The habitats within the area include amenity grassland and tree belts associated with the golf course as well as areas of arable land with associated trees and hedgerows. A low density of trees with moderate potential to support roosting bats is present.
- 2.4.429 One residential building south of Darnford Lane was found to support a brown long-eared summer, transient, non-breeding roost, with a peak emergence count of one. A second building was found to support a common pipistrelle summer (non-breeding) roost probably used by males and/or non-breeding females with a peak emergence count of two individual common pipistrelle. It is considered likely that habitats within Whittington Heath Golf Course SBI support bats using these building roosts.
- 2.4.430 The desk study records identify two non-breeding roosts of common pipistrelle and brown long-eared bat associated with Whittington Heath Barracks to the south-west of Whittington Heath Golf Course SBI. No confirmed tree roosts were identified within

this area although a number of hedgerow trees were identified as possessing moderate or occasionally high potential to provide suitable roosting features. The field surveys within the area have confirmed the presence of a six species of bat which utilise tree roosts for transient and/or maternity use therefore there remains the potential for these trees to be used as a roost site.

- 2.4.431 Noctule and Leisler's bats (confirmed within the area) are almost exclusively tree-dwelling species and exhibit a higher level of fidelity to particular roosting sites than many other tree-dwelling species. Brown long-eared bats and some *Myotis* species frequently utilise tree roosts and exhibit frequent roost switching. These species are therefore likely to utilise a higher number of different roost features throughout the year. Common and soprano pipistrelle also utilise tree roosts less exclusively but there is little information on their level of fidelity to individual trees. These bats are likely to make use of a number of suitable tree roost sites throughout the year including maternity, transitional, non-breeding and transient roosts.
- 2.4.432 Static surveys within habitats along the Wyrley and Essington canal found low levels of activity of commoner bat species including common pipistrelle, soprano pipistrelle and brown long-eared bat. A low number of calls by Leisler's and noctule were recorded each month during static surveys indicative of regular commuting activity.
- 2.4.433 Transects and static detector surveys of habitats associated with Fulfen Wood, Coventry Canal and Watery Bridge, identified low levels of foraging by common and soprano pipistrelles and occasional *Myotis* species. This is a largely arable area with associated field boundaries although the Coventry Canal does pass along the eastern edge of this habitat. Habitat links along vegetated boundary features such as hedgerows as well as the Coventry Canal enable dispersal of bat species between habitats of bat interest both within and outside of the Proposed Scheme. No confirmed building roosts were identified within this area and surveyed buildings within the local environs were identified as providing only low potential to provide suitable roosting features. No confirmed tree roosts were identified within this area although a small number of hedgerow trees within the arable land were identified as possessing moderate potential to provide suitable roosting features. The field surveys within the area have confirmed the presence of a three species of bat which utilise tree roosts for transient and/or maternity use therefore there remains the potential for these trees to be used a roost site.
- 2.4.434 Transects and static detector surveys of habitats adjacent to Fradley Business Park, west of Wood End Lane identified moderate levels of foraging and commuting activity by common and soprano pipistrelles and occasional brown long-eared bats as well noctule bats and *Myotis* species. Calls by Leisler's were recorded during static surveys. The habitats support a particularly high level of activity by noctule. Foraging activity was concentrated close to small fragments of woodland, watercourses and small water bodies.
- 2.4.435 Within habitats adjacent to Fradley Business Park, a summer (non breeding) roost at a residential house, near Streethay, with a peak emergence count of six individuals for common pipistrelle and ranging between one and two individuals for brown long-eared and soprano pipistrelle. This roost is consistent with summer use by males and/or non breeding females. It is likely that foraging habitats adjacent to Fradley

Business Park will support bats using this roost due to the proximity of the roost. There are a number of buildings identified as providing low potential to provide roosting opportunities for bats within the Fradley Business Park complex.

- 2.4.436 No confirmed tree roosts were identified within this area although a number of hedgerow trees associated with the Fradley Business Park were identified as possessing moderate or occasionally high potential to provide suitable roosting features. The field surveys within the area have confirmed the presence of a six species of bat which utilise tree roosts for transient and/or maternity use therefore there remains the potential for these trees to be used a roost site.
- 2.4.437 Transects and static detector surveys of habitats at Trent and Mersey Canal and adjacent woodlands (Ravenshaw Wood, Black Slough, the Slaish and Fradley Wood), identified moderate to high levels of activity by a diverse assemblage of bat species including: common pipistrelle, soprano pipistrelle, brown long-eared, Daubenton's, Natterer's, Leisler's, noctule and Nathusius' pipistrelle. A low number of calls of serotine were recorded during static surveys. Bat activity was primarily associated with the woodland edges (where the woodland meets pasture), interlinking hedgerows between woodland, and along the route of the canal.
- 2.4.438 One confirmed building roost was identified a residential building, east of Ravenshaw Wood, adjacent to the Trent and Mersey Canal. A possible small maternity or summer (non-breeding) roost of Daubenton's bats with a peak emergence count of eight individuals. High levels of activity recorded during surveys along the corridor of the Trent and Mersey Canal. Ravenshaw Wood and Black Slough support known summer (non breeding) tree roosts for noctule with a peak count of one observed during tree climbing surveys. Within Black Slough is a known summer (non breeding) tree roost for soprano pipistrelle, with a peak re-entry count of one observed during backtracking surveys. A further three tree roosts at Ravenshaw Wood and Black Slough were identified through a small number of droppings only and may support individuals of rarer bat species, which have been confirmed using adjacent habitats. A high density of trees with high and moderate potential to support roosting bats was found within Ravenshaw Wood, Black Slough and the Slaish.
- 2.4.439 Transects and static detector surveys of habitats fronting Shaw Lane and Tuppenhurst Lane including Bourne Brook, John's Gorse and Harvey's Rough, identified a diverse assemblage of bats including: common pipistrelle, soprano pipistrelle, brown long-eared bats, *Myotis* species, noctule, Nathusius' pipistrelle recorded foraging and commuting along Bourne Brook, woodland habitat and interconnecting hedgerows. Noctule bat was recorded in relatively low numbers during transect and static surveys particularly associated with woodland habitat. A very small number of passes by Nathusius' pipistrelle, a rarer bat species, were recorded during static surveys indicative of passage or transient use rather than core foraging or commuting habitat for this species. Low levels of Leisler's and serotine were recorded during static surveys indicative of passage or transient use rather than core foraging or commuting habitat for this species.
- 2.4.440 A residential building within land required for the construction of the Proposed Scheme was found to support a transient summer (non-breeding) roost probably used

by males and/or non-breeding females with a peak emergence count of one and two individuals for common pipistrelle and brown long-eared.

- 2.4.441 One barn and one converted barn along Shaw Lane within 100m of land required for the construction of the Proposed Scheme were found to support transient summer (non-breeding) roosts probably used by males and/or non-breeding females with a peak emergence/re-entry count of two individuals for common pipistrelle.
- 2.4.442 No confirmed tree roosts were identified within this area although a number of hedgerow trees within farmland and within woodland habitat associated with Bourne Brook and Harvey's Rough were identified as possessing moderate or occasionally high potential to provide suitable roosting bats.
- 2.4.443 Within urban and arable habitats south-east of Handsacre between Lichfield Road and Tuppenhurst Road, one residential building along the outskirts of Handsacre, was found to support a brown long-eared summer (non-breeding) brown long-eared roost, probably used by males and/or non-breeding females with a peak emergence of one. Brown long-eared droppings (100+ droppings) were identified during inspection survey. A number of further buildings of high or moderate potential to support roosting bats were identified associated with the same area of housing at Handsacre.
- 2.4.444 Static and transect surveys found low levels of activity of common and soprano pipistrelle and *Myotis* species associated with arable field boundaries. Individual passes by noctule, Leisler's and serotine were recorded occasionally during static surveys indicative of passage or transient use rather than core foraging or commuting habitat for these species.

3 Otter

3.1 Introduction

- 3.1.1 This section of the appendix presents the details of baseline information relating to otter (*Lutra lutra*) for the section of the Proposed Scheme that will pass through CFA16 to CFA22 inclusive.

3.2 Methodology

- 3.2.1 Details of the standard methodology utilised for otter surveys are provided in the Ecology technical note: Ecological field survey methods and standards (Volume5: Appendix CT-001-000/2).
- 3.2.2 Desk study records relating to otter were obtained from the following sources:
- Warwickshire Biological Records Centre (WBRC);
 - Warwickshire County Otter Survey Records (April 2012) supplied by Warwickshire County Otter Recorder (comprising all main watercourses surveyed within the administrative boundaries of Warwickshire) and anecdotal information from the Warwickshire County Otter Recorder;
 - Staffordshire Ecological Record (SER);
 - Northamptonshire Biological Records Centre (NBRC);
 - Staffordshire Biodiversity Action Plan (BAP);
 - Warwickshire, Coventry and Solihull BAP; and
 - Dr Paul Chanin personal otter records from canal surveys (2011/2012) comprising records on canal reaches up to 5 km from the centreline of the route of the Proposed Scheme.
- 3.2.3 Records from Biological Records Centres were available for up to 5km from the centreline of the route of the Proposed Scheme.
- 3.2.4 Table 181 provides a summary of the extents of watercourse which were subject to survey.

Table 181: Summary of features subject to otter survey within CFA16 to CFA22 inclusive

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁸⁵ (m) and orientation
030-OT2-118001	Oxford Canal (Summit Pound)	Canal	SP4551054780 to SP4438755363	Full (100%)	18 August 2012; 28 November 2012; 24 April 2013 and 20 June 2013.	CFA16	Crossed by the route of the Proposed Scheme
030-OT2-123001	Unnamed tributary watercourse of the River Itchen	Ordinary watercourse	SP4141559983 to SP4195059665	Moderate (25-75%)	17 December 2012; 11 March 2013; 26 April 2013 and 12 June 2012.	CFA16	Within land required
030-OT2-123002	Field pond near to tributary of the River Itchen	Pond	SP 42013 59839	Full (100%)	17 December 2012; 11 March 2013; 26 April 2013 and 12 June 2012.	CFA16	Within land required
030-OT2-126001	River Itchen	Ordinary watercourse	SP4007061242 to SP4047561747	Moderate (25-75%)	27 June 2013	CFA16	Crossed by the route of the Proposed Scheme
030-OT2-126004	Hall Farm Wood associated with River Itchen near Thorpe Bridge, Southam	Terrestrial site	SP4028461615	Little (15% approx)	27 June 2013	CFA16	Immediately adjacent to the land required to the east
030-OT2-127001	Ornamental pond within Dallas Burston Polo Club	Pond	SP3946862329	Full (100%)	24 April 2013 and 12 June 2013	CFA16	Within land required
030-OT1-127002	Drain running through Long Itchington and Ufton Wood SSSI	Drain	SP3896462353 to SP3862063055	Full (100%)	12 June 2013	CFA16	Within land required
030-OT2-129002	Grand Union Canal (Braunston to Leamington Spa)	Canal	SP3780863858 to SP3882764127	Full (100%)	21 August 2012; 29 August 2012; 26 November 2012; 24 April 2013 and 20 June 2013.	CFA17	Crossed by the route of the Proposed Scheme

¹⁸⁵ Hereafter the term 'land required' is used as a shortened version of the full term 'land required for the construction of the Proposed Scheme'.

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁸⁵ (m) and orientation
030-OT2-131002	Unnamed tributary watercourse of the River Leam	Ordinary watercourse	SP3602366624 to SP3701865906	Majority (75-99%)	16 November 2012, 11 December 2012; 6 March 2013 and 2 May 2013.	CFA17	Crossed by the route of the Proposed Scheme
030-OT2-132002	River Leam (confluence with River Itchen to confluence of River Avon)	Main river	SP3553967349 to SP3608967682	Majority (75-99%)	18 September 2012; 16 November 2012; 11 December 2012; 6 March 2013 and 23 May 2013.	CFA17	Crossed by the route of the Proposed Scheme
030-OT2-132003	Woodland at Ash Beds	Terrestrial site	SP3676966585 to SP3600766622	Full (100%)	11 December 2012 and 4 February 2013	CFA17	Crossed by the route of the Proposed Scheme
030-OT2-136003	Unnamed tributary watercourse of River Avon at Furzon Hill Farm	Ordinary watercourse	SP3405070828 to SP3457869996	Moderate (25-75%)	25 September 2012; 4 March; 2 May 2013 and 20 June 2013	CFA17 and CFA18	Within land required
030-OT2-137001	Decoy Spinney, Stoneleigh Park	Terrestrial site	SP3314270662	Majority (75-99%)	18 December 2012 and 23 April 2013	CFA18	Crossed by the route of the Proposed Scheme
030-OT2-138001	River Avon (Claycoton Yelvertoft Brook to confluence of the R. Sowe)	Main river	SP3242472376 to SP3329971557	Majority (75-99%)	15 August 2012; 18 December 2012; 16 January 2013 23 April 2013 and 19 June 2013	CFA18	Adjacent to the land required to the east
030-OT2-138002	Unnamed tributary watercourse of the River Avon associated with Hare's Parlour	Ordinary watercourse	SP3254070850 to SP3289270958	Little (<25%)	15 August 2012; 18 December 2012, 23 April 2013 and 19 June 2013	CFA18	Within land required
030-OT2-138004	Hare's Parlour, Stoneleigh Park	Terrestrial site	SP3282070940	Little (<25%)	18 December 2012 and 23 April 2013	CFA18	Within land required
030-OT2-138005	Gilbert's Spinney, Stoneleigh Park	Terrestrial site	SP3269871958	Full (100%)	18 December 2012 and 23 April 2013	CFA18	Adjacent to the land required to the east
030-OT2-138006	Unnamed woodland at Stareton in Stoneleigh Park (Stareton Woodland 1)	Terrestrial site	SP3323271366	Full (100%)	18 December 2012 and 23 April 2013	CFA18	Crossed by the route of the Proposed Scheme

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁸⁵ (m) and orientation
030-OT2-139001	River Avon (confluence of the R. Sowe to confluence of the R. Leam)	Main river	SP3187372053 to SP3242672378	Majority (75-99%)	15 August 2012; 18 December 2012; 16 January 2013 23 April 2013 and 19 June 2013	CFA18	Crossed by the route of the Proposed Scheme
030-OT2-139002	River Sowe	Main river	Small section surveyed under 030-OT-139001 SP3242672378 to SP3248272431	Full (100%)	15 August 2012; 18 December 2012; 16 January 2013 23 April 2013 and 19 June 2013	CFA18	Adjacent to the land required to the north
030-OT2-139003	Unnamed tributary watercourse of the River Avon in west of unnamed woodland	Ordinary watercourse	SP3190272061 to SP3182872255	Full (100%)	15 August 2012; 18 December 2012; 16 January 2013 23 April 2013 and 19 June 2013	CFA18	Within land required
030-OT2-139004	Unnamed tributary watercourse of the River Avon to east of unnamed woodland	Ordinary watercourse	SP3169171934 to SP3155072054	Little (<25%)	15 August 2012; 18 December 2012; 16 January 2013 23 April 2013 and 19 June 2013	CFA18	Within land required
030-OT2-139006	Unnamed woodland between River Avon and B4115, Stoneleigh Park	Terrestrial site	SP3175072086	Full (100%)	18 December 2012 and 23 April 2013	CFA18	Crossed by the route of the Proposed Scheme
030-OT2-141001	Finham Brook (conf Canley Brook to conf R Sowe)	Main river	SP3087173079 to SP3129373562	Moderate (25-75%)	20 August 2012, 13 December 2012, 12 April 2013, 20 June 2013	CFA18	Crossed by the route of the Proposed Scheme
030-OT2-141002	Canley Brook (source to confluence with Finham Brook)	Main river	SP3014673556 to SP2992774688	Majority (75-99%)	29 August 2012; 18 December 2012; 10 April 2013 and 20 June 2013	CFA18	Crossed by the route of the Proposed Scheme
030-OT1-141003	Pond to south of Dalehouse Farm	Pond	SP3095473275	Full (100%)	10 April 2013	CFA18	Within land required
030-OT2-141004	Three ponds to north of Dalehouse Farm	Pond	SP3075373427	Full (100%)	10 April 2013 and 20 June 2013	CFA18	Within land required

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁸⁵ (m) and orientation
030-OT2-141005	Pond to north of Dalehouse Farm	Pond	SP3072073585	Full (100%)	10 April 2013 and 20 June 2013	CFA18	Within land required
030-OT2-141006	Pond to south of Milburn Grange	Pond	SP3061173451	Full (100%)	10 April 2013 and 20 June 2013	CFA18	30m south-west
030-OT1-141007	Pond to east of Dalehouse Farm	Pond	SP3090373353	Full (100%)	10 April 2013	CFA18	Within land required
030-OT1-142001	Unnamed tributary watercourse of the Canley Brook	Ordinary watercourse	SP2886074324 to SP2979174449	Moderate (25-75%)	24 August 2012; 10 April 2013	CFA18	Crossed by the route of the Proposed Scheme
030-OT2-143001	Crackley Wood	Terrestrial site	SP2893474229	Little (<25%)	4 February 2013	CFA18	Crossed by the route of the Proposed Scheme
030-OT2-143002	Roughknowles Wood	Terrestrial site	SP2884274831	Full (100%)	5 February 2013	CFA18	Within land required
030-OT2-144004	Pond at South Hurst Farm	Pond	SP2833675120	Full (100%)	1 March 2013; 1 May 2013; 22 May 2013 and 19 June 2013	CFA18	5m south-west
030-OT2-145001	Unnamed tributary watercourse of the Canley Brook	Ordinary watercourse	SP2784575122 to SP2873875164	Majority (75-99%)	1 March 2013; 1 May 2013; 21/22 May 2013 and 19 June 2013	CFA18	Crossed by the route of the Proposed Scheme
030-OT2-145002	Broadwells Wood	Terrestrial site	SP2811375198	Full (100%)	5 February 2013	CFA18	Crossed by the route of the Proposed Scheme
030-OT1-145004	Pond near Brockendon Grange Farm	Pond	SP27507560	Full (100%)	1 March 2013	CFA18	50m north-east
030-OT1-145005	Southern pond in Broadwells Wood	Pond	SP2806775356	Full (100%)	1 March 2013	CFA18	150m north-east
030-OT1-145006	Northern pond in Broadwells Wood	Pond	SP27907550	Full (100%)	1 March 2013	CFA18	120m north-east

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁸⁵ (m) and orientation
030-OT2-146001	Unnamed Drain (draining to the Canley Brook)	Drain	SP2814475162 to SP2697775642	Majority (75-99%)	1 March 2013; 1 May 2013; 21/22 May 2013 and 18 June 2013	CFA18	Crossed by the route of the Proposed Scheme
030-OT1-160001	Unnamed tributary watercourse of the River Cole near Chelmsley Wood	Main river	SP1960686924 to SP1902687876	Majority (75-99%)	24 April 2013	CFA19	Crossed by the route of the Proposed Scheme
030-OT2-160002	River Cole (Hatchford-Kingshurst Brook to River Blythe)	Main river	SP1885487677 to SP1926089529	Majority (75-99%)	17 September 2012, 11 December 2012, 24 March 2013, 13 June 2013	CFA19	Crossed by the route of the Proposed Scheme
030-OT1-161001	Unnamed tributary watercourse of the River Cole, Coleshill Hall Farm	Ordinary watercourse	SP1899288229 to SP1962387708	Full (100%)	23 April 2013	CFA19	Crossed by the route of the Proposed Scheme
030-OT2-161003	Unnamed Drain – M6 drainage (Drains to the River Cole)	Drain	SP1905689286 to SP1929288606	Full (100%)	25 April 2013	CFA19	Immediately adjacent to the land required to the east
030-OT2-161004	Unnamed tributary watercourse of the River Cole at The Catmore (woodland)	Ordinary watercourse	SP1861188913 to SP1849188906	Full (100%)	24 April 2013, 17 May 2013 and 13 June 2013	CFA19	139m west
030-OT1-162001	Unnamed tributary watercourse of the River Cole at Grimstock	Ordinary watercourse	SP1942189771 to SP1928189738	Full (100%)	17 September 2012	CFA19	Immediately adjacent to the land required to the east
030-OT1-162002	Unnamed tributary watercourse of the River Cole at The Belt (woodland)	Ordinary watercourse	SP1928189738 to SP1831089654	Full (100%)	25 April 2013	CFA19	Crossed by the route of the Proposed Scheme
030-OT2-162003	The Belt (woodland)	Terrestrial site	SP1857489724	Full (100%)	5 February 2013	CFA19	Crossed by the route of the Proposed Scheme
030-OT1-162005	Pond to north of The Belt (woodland)	Pond	SP1839289767	Full (100%)	25 April 2013	CFA19	Crossed by the route of the Proposed Scheme
030-OT1-162006	Pond to south of The Belt (woodland)	Pond	SP1832489656	Full (100%)	25 April 2013	CFA19	Within land required

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁸⁵ (m) and orientation
030-OT1-162007	Pond within The Belt (woodland)	Pond	SP1865989744	Full (100%)	25 April 2013	CFA19	20m north-east
030-OT1-163001	Unnamed tributary watercourse of the River Tame	Ordinary watercourse	SP1941091401 to SP1821690334	Full (100%)	24 April 2013	CFA19	Crossed by the route of the Proposed Scheme
030-OT1-163003	Large pond to south of unnamed tributary of the River Tame, Water Orton	Pond	SP1832090453	Full (100%)	24 April 2013	CFA19	Crossed by the route of the Proposed Scheme
030-OT1-163004	Pond to north of unnamed tributary of the River Tame, Water Orton	Pond	SP1818190588	Full (100%)	24 April 2013	CFA19	Within land required
030-OT1-163005	Small pond to south of unnamed tributary of the River Tame, Water Orton	Pond	SP1847190564	Full (100%)	24 April 2013	CFA19	Crossed by the route of the Proposed Scheme
030-OT1-163006	Drain into Unnamed tributary watercourse of the River Tame	Drain	SP1845090569 to SP1842690638	Full (100%)	24 April 2013	CFA19	Crossed by the route of the Proposed Scheme
030-OT2-164001	Flooded pool within Coleshill Sewage Works Grassland LWS	Lagoon	SP1938491391 to SP1883291607	Full (100%)	11 October 2012, 18/19 December 2013, 24 April 2013, 13 June 2013	CFA19	Within land required
030-OT2-164002	River Tame (from confluence of the two arms to River Blythe)	Main river	SP1941091401 to SP1834091719	Majority (75-99%)	16 August 2012, 21 August 2012, 18/19 December 2012, 24 April 2013, 13 June 2013	CFA19 and CFA20	Crossed by the route of the Proposed Scheme
030-OT1-164003	Unnamed tributary watercourse of the River Tame south	Ordinary watercourse	SP1944791629 to SP1822791985	Majority (75-99%)	11 October 2012	CFA20	Crossed by the route of the Proposed Scheme
030-OT1-164004	Unnamed tributary watercourse of the River Tame north	Ordinary watercourse	SP1945491662 to SP1901391898	Majority (75-99%)	11 October 2012	CFA20	Crossed by the route of the Proposed Scheme
030-OT1-165001	Unnamed drain (Drains to River Tame)	Drain	SP1901391898 to SP1928792143	Majority (75-99%)	11 October 2012	CFA20	Crossed by the route of the Proposed Scheme

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁸⁵ (m) and orientation
030-OT2-167001	Birmingham and Fazeley Canal (upper section)	Canal	SP1903594301 to SP1945295139	Full (100%)	20 August 2012, 29 August 2012, 27 November, 24 April 2013, 18 June 2013	CFA20	Crossed by the route of the Proposed Scheme
030-OT2-167002	Southern pond adjacent to the Birmingham and Fazeley Canal	Pond	SP19189485	Full (100%)	20 August 2012, 27 November 2012, 9 April 2013, 18 June 2013	CFA20	Crossed by the route of the Proposed Scheme
030-OT2-167003	Northern pond adjacent to the Birmingham and Fazeley Canal	Pond	SP19189485	Full (100%)	20 August 2012, 27 November 2012, 9 April 2013, 18 June 2013	CFA20	Crossed by the route of the Proposed Scheme
030-OT2-168001	Unnamed drain (drains to Middleton Hall Catchment (tributary of Langley Brook))	Drain	SP1926194778 to SP1924595278	Full (100%)	9 April 2013 and 18 June 2013	CFA20	Within land required
030-OT2-168002	Unnamed Stream (Tributary of Middleton Hall Catch (tributary of Langley Brook))	Ordinary watercourse	SP1908995175 to SP1940395496	Full (100%)	9 April 2013 and 18 June 2013	CFA20	Crossed by the route of the Proposed Scheme
030-OT2-168004	Cuttle Mill Fishery central pool	Pond	SP1903095017	Full (100%)	12 September 2012, 12 December 2102, 27 February 2013, 17 May 2013	CFA20	Adjacent to land required
030-OT2-168005	Cuttle Mill Fishery northern pool	Pond	SP1908794990	Full (100%)	12 September 2012, 12 December 2102, 27 February 2013, 17 May 2013	CFA20	Adjacent to land required
030-OT2-168006	Cuttle Mill Fishery southern pool	Pond	SP1897995117	Full (100%)	12 September 2012, 12 December 2102, 27 February 2013, 17 May 2013	CFA20	Adjacent to land required
030-OT2-168009	Cuttle Mill Fishery plantation (Lower Mill and Mill Plantation)	Terrestrial site	SP1899295039	Full (100%)	27 February 2013	CFA20	Adjacent to land required
030-OT2-170001	Middleton Hall Farm Quarry	Terrestrial site	SP1893797367	Majority (75-99%)	27 March 2013	CFA20	Crossed by the route of the Proposed Scheme

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁸⁵ (m) and orientation
030-OT2-170002	3 x Ponds adjacent to Coneybury Wood	Pond	SP1897697447	Full (100%)	12 June 2013	CFA20	Immediately adjacent to land required to the east
030-OT1-170005	Middleton Hall Farm Quarry Pool	Pond	SP1894397171	Moderate (25-75%)	19 August 2012	CFA20	Crossed by the route of the Proposed Scheme
030-OT2-171001	Langley Brook (from Source to Middleton Hall Catch)	Ordinary watercourse	SP1902098243 to SP1820198028	Moderate (25-75%)	12 March 2013, 26 April 2013, 12 June 2013	CFA20	Crossed by the route of the Proposed Scheme
030-OT2-171002	Large pond alongside Langley Brook	Pond	SP1865598207	Full (100%)	12 March 2013, 26 April 2013, 12 June 2013	CFA20	Immediately adjacent to land required to the east
030-OT2-171004	Walkers Spinney, Middleton	Terrestrial Site	SP1832898190	Full (100%)	12 June 2013	CFA20	Immediately adjacent to land required to the west
030-OT2-172002	Gallows Brook	Ordinary watercourse	SP1848298960 to SP1768799183	Majority (75-99%)	16 August 2012, 17 December 2012, 28 February 2013, 16 May 2013	CFA20 and CFA21	Crossed by the route of the Proposed Scheme
030-OT2-172003	Small reservoir/fishing lake at Brook Farm, Middleton	Pond	SP1832499393	Full (100%)	16 August 2012, 17 December 2012, 28 February 2013, 16 May 2013	CFA20	150m north-east
030-OT2-172004	Ponds north of Gallows Brook at Brook Farm, Middleton	Pond	SP1778699199	Full (100%)	16 August, 17 December 2012, 28 February 2013 and 16 May 2013	CFA20	Within land required
030-OT1-172006	Pond close to Gallows Brook at Brook Farm, Middleton	Pond	SP1843699056	Full (100%)	17 December 2012	CFA20	70m west
030-OT1-172007	Marl Pit at Brook Farm, Middleton	Pond	SP1786999347	Full (100%)	17 December 2012	CFA20	Within land required
030-OT1-172008	Small pond at Brook Farm, Middleton	Pond	SP1786699321	Full (100%)	28 February 2013	CFA20	Immediately adjacent to land required to the east

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁸⁵ (m) and orientation
030-OT2-173001	Unnamed tributary watercourse of the River Tame at Brook Farm (Langley Brook from Middleton Hall Catch to River Tame)	Ordinary watercourse	SP1792799453 to SP1722099574	Majority (75-99%)	16 August 2012, 17 December 2012, 28 February 2013 and 16 May 2013	CFA21	Crossed by the route of the Proposed Scheme
030-OT1-173002	Unnamed tributary watercourse of the River Tame at Shirral Hall Farm (Tributary of Langley Brook downstream of confluence)	Ordinary watercourse	SP1766999619 to SK1664400140	Little (<25%)	23 April 2013	CFA21	Crossed by the route of the Proposed Scheme
030-OT1-174002	Unnamed drain at Woodside Farm (becomes a tributary of the Black-Bourne Brook from source (confluence) to River Tame)	Drain	SK1671301457 to SK1629801323	Moderate (25-75%)	25 April 2013	CFA21	Within land required
030-OT1-175001	Unnamed tributary watercourse of the Black-Bourne Brook at Holt Farm (from source (confluence) to River Tame)	Ordinary watercourse	SK1624802079 to SK1583001367	Moderate (25-75%)	25 April 2013 and 11 June 2013	CFA21	Crossed by the route of the Proposed Scheme
030-OT1-175002	Unnamed Stream (tributary of Black-Bourne Brook from source (confluence) to River Tame)	Ordinary watercourse	SK1602001789 to SK1534502073	Majority (75-99%)	25 April 2013 and 11 June 2013	CFA21	Crossed by the route of the Proposed Scheme
030-OT2-176001	Snake's Hill	Terrestrial site	SK1539903046	Full (100%)	11 June 2013	CFA21	Immediately adjacent to land required to the east
030-OT2-176002	Pond to south of Snakes Hill, Hints	Pond	SK15530282	Full (100%)	21 August 2012, 17 December 2012, 25 April 2013 and 11 June 2013	CFA21	Immediately adjacent to land required to the east
030-OT2-176004	Pond to north-east of Brock Hurst Farm	Pond	SK1573401886	Full (100%)	11 June 2013	CFA21	Immediately adjacent to land required to the west

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁸⁵ (m) and orientation
030-OT2-177001	Black-Bourne Brook from source (confluence) to River Tame	Main river	SK1459303474 to SK1567302741	Majority (75-99%)	21 August 2012, 17 December, 25 April 2013, 11 June 2013	CFA21	Crossed by the route of the Proposed Scheme
030-OT2-177002	Pond to south of Black-Bourne Brook	Pond	SK1474703492	Full (100%)	13 September 2012, 10 March 2013, 25 April 2013 and 11 June 2013	CFA21	10m west
030-OT1-177003	Pond to north of Black-Bourne Brook	Pond	SK1478403684	Full (100%)	11 March 2013	CFA21	Immediately adjacent to land required to the west
030-OT1-177005	Unnamed drain to immediate east of Black-Bourne Brook	Drain	SK1535303015 to SK1515503387	Full (100%)	11 March 2013	CFA21	Within land required
030-OT1-177007	Unnamed drain at Bourne House, Weeford	Drain	SK1477003538 to SK1472303521	Full (100%)	11 March 2013	CFA21	50m south-west
030-OT2-177008	Pond in Snakes Hill Wood, Hints	Pond	SK1559002885	Full (100%)	21 August 2012, 17 December, 25 April 2013, 11 June 2013	CFA21	Adjacent to the land required
030-OT2-177009	Drain associated with the Black-Bourne Brook	Drain	SK1552402867 to SK1550402840	Full (100%)	21 August 2012, 17 December, 25 April 2013, 11 June 2013	CFA21	Immediately adjacent to land required to the west
030-OT2-179001	Stream and associated large pond associated with Moor Covert	Ordinary watercourse and pond	SK1428605732 to SK1459305353	Majority (75-99%)	27 September 2012, 29 April 2013, 16 May 2013 and 14 June 2013	CFA21	Adjacent to the land required
030-OT2-183001	Unnamed tributary watercourse of Fisherwick Brook	Ordinary watercourse	SK1498309246 to SK1434108892	Moderate (25-75%)	25 April 2013, 11 June 2013	CFA22	Crossed by the route of the Proposed Scheme
030-OT1-183002	Wyrley and Essington Canal (disused)	Canal	SK1499909347 to SK1450309049	Full (100%)	17 June 2013	CFA22	Crossed by the route of the Proposed Scheme

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁸⁵ (m) and orientation
030-OT2-183003	Coventry and Ashby Canals (Coventry Canal)	Canal	SK1516909537 to SK14772311091	Full (100%)	19 August 2012, 27 November 2012, 25 April 2013 and 17 June 2013	CFA22	Immediately adjacent to land required to the east
030-OT1-184001	Unnamed tributary watercourse of Mare Brook	Main river	SK1521510886 to SK1404009635	Little (<25%)	23 April 2013	CFA22	Crossed by the route of the Proposed Scheme
030-OT1-185001	Mare brook	Ordinary watercourse	SK1521510886 to SK1383511231	Moderate (25-75%)	26 June 2013	CFA22	Crossed by the route of the Proposed Scheme
030-OT1-185003	Pond north of tributary of Mare brook	Pond	SK1454911349	Full (100%)	12 August 2012	CFA22	120m east
030-OT2-186001	Unnamed tributary watercourse of Mare Brook at Fradley Business Park	Ordinary watercourse	SK1394512551 to SK1442211605	Majority (75-99%)	11 September 2012, 10 December 2012, 27 February 2013 and 14 May 2013	CFA22	Crossed by the route of the Proposed Scheme
030-OT2-186002	Pond associated with the tributary of Mare brook at Fradley Business Park	Pond	SK1424211784	Full (100%)	11 September 2012, 10 December 2012, 27 February, and 14 May 2013	CFA22	Within land required
030-OT1-186005	Northern pond at Fradley Business Park	Pond	SK1429011885	Full (100%)	11 September 2012	CFA22	Within land required
030-OT1-186006	Eastern pond at Fradley Business Park	Pond	SK1438711813	Little (<25%)	11 September 2012	CFA22	Immediately adjacent to the land required to the east
030-OT2-188001	Trent and Mersey Canal (summit to Alrewas)	Canal	SK1361113726 to SK1243313851	Full (100%)	28 August 2012, 27 November 2012, 25 April 2013 and 17 June 2013	CFA22	Crossed by the route of the Proposed Scheme
030-OT2-188002	Curborough Brook (Pyford Brook Catchment (tributary of Trent))	Main river	SK1304413877 to SK1286812985	Majority (75-99%)	28 September 2012, 29 April 2013, 16 May 2013 and 14 June 2013	CFA22	Crossed by the route of the Proposed Scheme

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁸⁵ (m) and orientation
030-OT1-188003	Pond to south of Trent and Mersey Canal	Pond	SK1307513208	Full (100%)	28 September 2012	CFA22	Immediately adjacent to the land required to the south
030-OT2-188004	Fradley Wood	Terrestrial site	SK1375513488	Full (100%)	6 February 2013	CFA22	Crossed by the route of the Proposed Scheme
030-OT2-188006	Brokendown Wood	Terrestrial site	North section SK1339113563 South section SK1304713252	Full (100%)	6 February 2013	CFA22	Crossed by the route of the Proposed Scheme
030-OT2-188007	Pond to west of Curborough Brook	Pond	SK1299013425	Full (100%)	30 April 2013, 16 May 2013 and 14 June 2013	CFA22	Immediately adjacent to the land required
030-OT2-188008	Drain/stream A in Ravenshaw Wood	Drain	SK1233213482 to SK1248713477	Full (100%)	20 August 2012, 19 December 2012, 26 April 2013 and 10 June 2013	CFA22	Immediately adjacent to the land required to the west
030-OT2-188009	Drain/stream B in Ravenshaw Wood	Drain	SK1253413637 to SK1230913726	Full (100%)	20 August 2012, 19 December 2012, 26 April 2013 and 10 June 2013	CFA22	Within land required
030-OT2-188010	Drain/stream C in Ravenshaw Wood	Drain	SK1230913726 to SK1233213482	Full (100%)	20 August 2012, 19 December 2012, 26 April 2013 and 10 June 2013	CFA22	Immediately adjacent to the land required to the west
030-OT2-189001	Drain/stream D in Ravenshaw Wood	Drain	SK1235313807 to SK1161414560	Full (100%)	20 August 2012, 19 December 2012, 26 April 2013 and 10 June 2013	CFA22	Immediately adjacent to the land required to the east
030-OT1-189003	Black Slough Farm drain network	Drain	SK1162614307 to SK1166514618	Full (100%)	28 August 2012	CFA22	Immediately adjacent to the land required to the east
030-OT2-190001	Bourne Brook (Bourne-Bilson Brook Catchment (tributary of River Trent))	Ordinary watercourse	SK1045613753 to SK1112514634	Moderate (25-75%)	4 September 2012, 26 March 2013, 10th October 2012 and 26 June 2013	CFA22	Crossed by the route of the Proposed Scheme

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁸⁵ (m) and orientation
030-OT1-190002	Pond to south of Bourne brook	Ponds	SK1089913990	Full (100%)	26 March 2013	CFA22	Within land required
030-OT2-190004	Ponds associated with Bourne brook	Ponds	SK1080314392	Full (100%)	26 March 2013 and 26 June 2013	CFA22	Within land required
030-OT1-190005	Pond to north of Bourne brook	Ponds	SK1077714172	Full (100%)	26 March 2013	CFA22	Within land required
030-OT1-190006	Drain at Bourne brook	Drain	SK1064213936	Full (100%)	26 March 2013	CFA22	Within land required
030-OT1-191001	Unnamed Drain A (Becomes a tributary of Trent)	Drain	SK0999314514 to SK0972215624	Little (<25%)	10 June 2013	CFA22	Crossed by the route of the Proposed Scheme
030-OT1-192001	Unnamed Drain B (Becomes a tributary of Trent)	Drain	SK0923715131 to SK0971415298	Full (100%)	10 June 2013	CFA22	Crossed by the Proposed Scheme

- 3.2.5 A scoping study was carried out to identify suitable watercourses and water bodies for otter based on Ordnance Survey maps, aerial photography, relevant Phase 1 habitat survey results and initial scoping visits. Those watercourses and water bodies that were scoped out from further assessment for otter with a rationale are presented in Table 182.

Table 182: Rationale for scoping out requirement for further survey of watercourses/water bodies in CFA16 to CFA22

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	North of Wormleighton	SP 46135 53576	Too small ¹⁸⁶ and isolated ¹⁸⁷	CFA16
Water body	North of Wormleighton	SP 45992 53588	Too small and isolated	CFA16
Water body	North of Wormleighton	SP 45155 54348	Too small and isolated	CFA16
Water body	North of Wormleighton	SP 44695 55970	Dry ditch	CFA16
Water body	North-east of Ladbroke Fox Covert	SP 43679 57558	Too small and isolated	CFA16
Water body	North of Ladbroke Fox Covert	SP 43409 58230	Too isolated	CFA16
Water body	Lady Hill	SP 42789 58897	Too isolated	CFA16
Water body	Windmill Hill	SP 42524 58973	Too isolated	CFA16
Water body	East of Windmill Hill	SP 42859 58643	Too isolated	CFA16
Water body	Windmill Hill	SP 42425 58948	Too isolated	CFA16
Water body	East of A423 Banbury Road	SP 42339 59627	Too isolated	CFA16
Water body	East of A423 Banbury Road	SP 42369 59799	Continuation of watercourse, therefore not a separate water body	CFA16
Water body	East of A423 Banbury Road	SP 42541 59614	Too isolated	CFA16
Water body	East of A423 Banbury Road	SP 42242 60008	Field drain isolated by road	CFA16
Water body	East of A423 Banbury Road	SP 41788 60041	Managed ornamental pond and isolated	CFA16
Water body	East of A423 Banbury Road	SP 41963 60001	Too isolated	CFA16
Water body	South-west of Southam	SP 41721 60303	Too isolated	CFA16
Water body	South-west of Southam	SP 41795 60262	Too isolated	CFA16
Water body	South of Southam	SP 41009 60866	Too isolated	CFA16
Water body	South-east of Southam	SP 41220 60687	Dry ditch	CFA16
Water body	South-east of Southam	SP 40875 60528	Too isolated	CFA16
Water body	North of A425 Southam Road	SP 40433 61505	Too isolated	CFA16
Water body	North of A425 Southam Road	SP 40401 61515	Too small	CFA16
Water body	Bascote Heath	SP 39205 62397	Field drain	CFA16

¹⁸⁶ Small water body with little cover suitable to provide refuge and generally of a non stocked nature offering very little food resource and therefore unlikely to be utilised by otter.

¹⁸⁷ Isolated from further suitable connective watercourses or water bodies by a significant distance and therefore unlikely to be utilised by otter.

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	Bascote Heath	SP 38980 61985	Too isolated	CFA16
Water body	East of Ufton Wood	SP 39281 61888	Very shallow field drain	CFA16
Water body	East Longhole Bridge	SP 38788 63175	Field drain	CFA16
Water body	North-west of Ufton Wood	SP 38502 63259	Field drain	CFA16
Water body	North-west of Ufton Wood	SP 38547 63117	Field drain	CFA16
Water body	North-east of Longhole Bridge	SP 39037 63358	Field drain	CFA16
Water body	North-east of Longhole Bridge	SP 38778 63734	Too isolated	CFA16
Water body	North-east of Longhole Bridge	SP 38708 63750	Too isolated	CFA16
Water body	North of Grand Union Canal, south of Print Wood	SP 37924 63931	Drain alongside Grand Union Canal – surveyed as part of the canal	CFA17
Water body	North of Grand Union Canal, south of Print Wood	SP 38135 63962	Drain alongside Grand Union Canal – surveyed as part of the canal	CFA17
Water body	South of Print Wood	SP 37839 64812	Too isolated	CFA17
Water body	Sutton Spinney	SP 37376 65220	Too isolated	CFA17
Water body	Sutton Spinney	SP 37064 65910	Likely to be ephemeral pools with low suitability due to location on disused rail line (Offchurch Greenway) and disturbance by members of the public	CFA17
Water body	Sutton Spinney	SP 37111 65940	Likely to be ephemeral pools with low suitability due to location on disused rail line (Offchurch Greenway)	CFA17
Water body	Sutton Spinney	SP 37459 65449	Too small and isolated	CFA17
Water body	East of River Leam	SP 36586 66987	Too isolated	CFA17
Water body	North of Offchurch	SP 36406 66237	Too small and isolated	CFA17
Water body	East of South Cubbington Wood	SP 35721 67960	Too isolated	CFA17
Water body	North-east of South Cubbington Wood	SP 35669 68533	Too isolated	CFA17
Water body	East of Cubbington, west of South Cubbington Wood	SP 35105 68380	Too isolated	CFA17
Water body	South-west of Cubbington	SP 35232 67411	Too small and isolated	CFA17
Water body	South-west of Cubbington	SP 35189 67503	Too small and isolated	CFA17
Water body	South Cubbington wood	SP 35162 68939	Too small and isolated	CFA17
Water body	North of Cubbington	SP 34321 69983	Too isolated	CFA17
Water body	North of Cubbington	SP 33966 69955	Too isolated	CFA18
Water body	South-east of Stoneleigh Park	SP 33560 70402	Too isolated	CFA18
Water body	North of Heathfield	SP 34021 70388	Too small	CFA18
Water body	North of Heathfield	SP 34026 70402	Too small	CFA18

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	North of Heathfield	SP 33074 70941	Too isolated	CFA18
Water body	South-east of Stoneleigh Park	SP 32695 70746	Too isolated	CFA18
Water body	Stoneleigh Park	SP 32752 71460	High levels of disturbance	CFA18
Water body	Stoneleigh Park	SP 32468 72035	Too isolated	CFA18
Water body	North-east of Stoneleigh park	SP 32642 71927	Tank – not suitable	CFA18
Water body	North of Stoneleigh Park	SP 32518 71806	Too small and isolated	CFA18
Water body	North of Stoneleigh Park	SP 32036 73021	Too isolated	CFA18
Water body	North of Stoneleigh Park	SP 31740 72810	Too isolated	CFA18
Water body	North-west of A46 Kenilworth Bypass	SP 31599 72990	Too isolated	CFA18
Water body	East of A46 Kenilworth Bypass/West of Kings Wood	SP 31977 73045	Too isolated	CFA18
Water body	West of Kenilworth	SP 31777 72296	Too isolated	CFA18
Water body	North-east of Kenilworth Golf Club	SP 31289 72962	Not present	CFA18
Water body	West of Kings Wood	SP 31672 73061	Too isolated	CFA18
Water body	Kenilworth Golf Club	SP 31410 72631	Too isolated	CFA18
Water body	South-east of A429 Kenilworth Road	SP 30717 73583	Too isolated	CFA18
Water body	South-east of A429 Kenilworth Road	SP 31153 72979	Too isolated	CFA18
Water body	South of Westerly Bridge	SP 31293 73258	Too isolated	CFA18
Water body	South-east of A429 Kenilworth Road	SP 30924 73814	Too isolated	CFA18
Water body	North of Kenilworth	SP 30385 73815	Too isolated	CFA18
Water body	North of Kenilworth	SP 30408 73889	Too isolated	CFA18
Water body	North of Milburn Grange	SP 30696 73923	Too isolated	CFA18
Water body	North-west of A429 Kenilworth Road	SP 29793 73839	Close to Finham Brook – surveyed as part of water course surveys	CFA18
Water body	East of Crackley wood	SP 29312 74139	Sub-optimal habitat	CFA18
Water body	South-east of Broadwells Wood	SP 28415 74834	Too isolated	CFA18
Water body	East of Broadwells wood	SP 28370 74895	Too isolated	CFA18
Water body	North of Red Lane	SP 27817 74822	Too isolated	CFA18
Water body	North of Blind Lane	SP 28367 74614	Too isolated	CFA18
Water body	South-west of Roughknowles Wood	SP 28316 74998	Too isolated	CFA18
Water body	South-west of Broadwells Wood	SP 27747 75465	Too isolated	CFA18
Water body	West of Burton Green	SP 27348 75324	Not present	CFA18
Water body	Burton Green	SP 27089 75682	Too small and isolated	CFA18

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	Between Red Lane and the dismantled railway	SP 27276 75302	Too small and isolated	CFA18
Water body	East of Burton Green	SP 27604 75338	Dry	CFA18
Water body	West of Broadswell Wood	SP 27782 75323	Dry	CFA18
Water body	South-east of Black Waste wood	SP 27718 75536	Dry	CFA18
Water body	North-east of Water Orton	SP 26725 75883	Too isolated	CFA18
Water body	North-east of Water Orton	SP 26371 76122	Too isolated	CFA18
Water body	North-east of Water Orton	SP 27010 75898	Too isolated	CFA18
Water body	North-east of Water Orton	SP 26607 75689	Too isolated	CFA18
Water body	North-east of Water Orton	SP 26914 75806	Too small and isolated	CFA18
Water body	North-east of Water Orton	SP 26988 76004	Too small and isolated	CFA18
Water body	North-east of Water Orton	SP 26753 76157	Too small and isolated	CFA18
Water body	North-east of Water Orton	SP 26850 75974	Too small and isolated	CFA18
Water body	North-east of Water Orton	SP 26853 75980	Too small and isolated	CFA18
Water body	North-east of Water Orton	SP 26958 75912	Too small and isolated	CFA18
Water body	North-east of Water Orton	SP 26626 75984	Too isolated	CFA18
Water body	North-east of Water Orton	SP 26629 76528	Too isolated	CFA18
Water body	North-east of Water Orton	SP 26245 76277	Too isolated	CFA18
Water body	North-east of Water Orton	SP 25983 76369	Too isolated	CFA18
Water body	North-east of Water Orton	SP 25730 76776	Too isolated	CFA18
Water body	North-east of Water Orton	SP 25903 76868	Too small and isolated	CFA18
Water body	North-east of Water Orton	SP 25784 76859	Small, isolated field drain	CFA18
Water body	North-east of Water Orton	SP 25842 76645	Too small and isolated	CFA18
Water body	North-east of Water Orton	SP 25889 76500	Small, isolated field drain	CFA18
Water body	North-east of Water Orton	SP 25940 76884	Too small and isolated	CFA18
Water body	South-east of Black Waste wood	SP 18857 87396	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 19139 88226	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 19130 88420	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18875 88172	Too small and isolated	CFA19
Water body	South-east of Black Waste wood	SP 19236 88321	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18747 88255	Over 100m from land required for construction of the Proposed Scheme	CFA19
Water body	South-east of Black Waste wood	SP 19037 89781	Too isolated	CFA19

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	South-east of Black Waste wood	SP 19380 89168	Over 100m from land required for construction of the Proposed Scheme	CFA19
Water body	South-east of Black Waste wood	SP 19080 89897	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 19082 89905	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18851 90270	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18827 90310	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18923 90292	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18822 90546	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18860 90246	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18869 90256	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18777 90178	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 19279 90621	Not present	CFA19
Water body	South-east of Black Waste wood	SP 19429 91241	Unsuitable habitat-part of Coleshill Sewage Treatment Works	CFA19
Water body	South-east of Black Waste wood	SP 19584 91447	Unsuitable sewage treatment beds	CFA19
Water body	South-east of Black Waste wood	SP 19493 91205	Unsuitable sewage ponds	CFA19
Water body	South-east of Black Waste wood	SP 19442 91253	Unsuitable sewage ponds	CFA19
Water body	South-east of Black Waste wood	SP 19284 91295	Unsuitable sewage ponds	CFA19
Water body	South of M42	SP 18395 89766	Too small and isolated	CFA19
Water body	South of M42	SP 18660 89744	Too small and isolated	CFA19
Water body	South of M42	SP 18326 89657	Too small and isolated	CFA19
Water body	The belt, south of M42	SP 18311 89650	Too small and isolated	CFA19
Water body	South of Water Orton	SP 18250 90186	Too isolated	CFA19
Water body	North of M42	SP 18249 90203	Too isolated	CFA19
Water body	South of Water Orton	SP 18068 90189	Too isolated	CFA19
Water body	North-east smiths wood	SP 17625 89899	Too isolated	CFA19
Water body	West of M6 toll and south of M42	SP 18233 89474	Too isolated	CFA19
Water body	West of M6 toll and south of M42	SP 18425 89699	Not present	CFA19
Water body	West of M6 toll and South of M42	SP 18197 89469	Not present	CFA19
Water body	West of M6 toll and South of M42	SP 18281 89731	Too isolated	CFA19
Water body	West of M6 toll and South of M42	SP 18322 89714	Too isolated	CFA19
Water body	West of M6 toll and South of M42	SP 18208 89663	Too isolated	CFA19
Water body	South of Water Orton	SP 17749 90461	Too small and isolated	CFA19

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	South of Water Orton	SP 17885 90352	Too small and isolated	CFA19
Water body	South-west of Water Orton	SP 17517 90621	Too small and isolated	CFA19
Water body	South-west of Water Orton	SP 17424 90424	Too isolated	CFA19
Water body	South-west of Water Orton	SP 17294 90673	Too isolated	CFA19
Water body	South-west of Water Orton	SP 17435 90708	Too isolated	CFA19
Water body	South of Water Orton	SP 17946 90483	Too isolated	CFA19
Water body	South of Water Orton	SP 18319 90460	Too isolated	CFA19
Water body	South of Water Orton	SP 18443 90604	Too isolated – Large distance between water body and watercourse and motorway barrier present	CFA19
Water body	South of Water Orton	SP 18034 90509	Too isolated – Large distance between water body and watercourse and motorway barrier present	CFA19
Water body	South of Water Orton	SP 18180 90585	Too isolated – Large distance between water body and watercourse and motorway barrier present	CFA19
Water body	South of Water Orton	SP 18473 90561	Too isolated – Large distance between water body and watercourse and motorway barrier present	CFA19
Water body	Water Orton	SP 18657 90650	Too small and isolated	CFA19
Water body	Water Orton	SP 18665 90656	Too small and isolated	CFA19
Water body	South of Water Orton	SP 18265 90643	Too isolated – Large distance between water body and watercourse and motorway barrier present	CFA19
Water body	North-west of M42, south of Vicarage Lane, Water Orton	SP 18299 90349	Field drain	CFA19
Water body	North-west of M42, south of Vicarage Lane, Water Orton	SP 18478 90196	Field drain	CFA19
Water body	South of Water Orton	SP 18550 90337	Field drain	CFA19
Water body	South-east of Black Waste wood	SP 19197 91710	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19186 91514	Unsuitable habitat-part of Coleshill Sewage Treatment Works	CFA20
Water body	South-east of Black Waste wood	SP 18967 92401	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19084 92455	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19617 92574	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19254 92000	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19568 92407	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19024 93576	Too isolated	CFA20

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	South-east of Black Waste wood	SP 19696 93352	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19656 92990	Isolated field ditch/drain	CFA20
Water body	South-east of Black Waste wood	SP 20090 92993	Isolated field ditch/drain	CFA20
Water body	South-east of Black Waste wood	SP 19634 93357	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19607 93162	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19357 93957	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19129 94423	Too small	CFA20
Water body	South-east of Black Waste wood	SP 19135 94421	Too small	CFA20
Water body	South-east of Black Waste wood	SP 19451 93933	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19126 94411	Too small	CFA20
Water body	South-east of Black Waste wood	SP 19451 94121	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19488 94257	Too isolated	CFA20
Water body	West of The Belfry, north of M42 J9	SP 19091 94993	Too isolated	CFA20
Water body	West of The Belfry, north of M42 J9	SP 19007 95072	Too isolated	CFA20
Water body	West of The Belfry, north of M42 J9	SP 19069 95124	Too small	CFA20
Water body	West of North Wood	SP 18983 95495	Too isolated	CFA20
Water body	West of North Wood	SP 19055 95642	Too isolated	CFA20
Water body	North of Marston Field Bridge	SP 19688 95122	Too isolated	CFA20
Water body	West of Bodymoor Heath	SP 20102 95797	Too small	CFA20
Water body	West of The Belfry, north of M42 J9	SP 18933 95053	Not present	CFA20
Water body	West of The Belfry, north of M42 J9	SP 18948 95003	Not present	CFA20
Water body	North of North Wood	SP 18854 96698	Too isolated	CFA20
Water body	South-east of Middleton, west of A4091 Tamworth Road	SP 18542 97523	Too isolated	CFA20
Water body	South of Coneybury Wood	SP 18906 97638	Too isolated	CFA20
Water body	North-east of Coneybury Wood	SP 18918 97677	Too isolated	CFA20
Water body	Middleton Park	SP 18861 97829	Too isolated	CFA20
Water body	Middleton Park	SP 18658 98072	Too isolated	CFA20
Water body	Middleton	SP 18231 98145	over 100m from the land required for construction of the Proposed Scheme	CFA20
Water body	South-east of Middleton	SP 18043 97893	over 100m from the land required for construction of the Proposed Scheme	CFA20
Water body	East of Oakleigh	SK 17408 00129	Too isolated	CFA21
Water body	East of Oakleigh	SK 17402 00113	Too isolated	CFA21

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	South-east of Loddy Wood	SP 16710 99723	Too isolated and over 100m from the land required for construction of the Proposed Scheme	CFA21
Water body	North-east of Bangley Wood	SK 16967 00388	Too isolated	CFA21
Water body	North of Bangley Wood	SK 16850 00707	Too isolated	CFA21
Water body	South-west of Oakleigh	SK 17072 00578	Isolated field drain	CFA21
Water body	South of Oakleigh	SK 16346 00894	Isolated field drain	CFA21
Water body	South of Oakleigh	SK 16435 00947	Isolated field drain	CFA21
Water body	South of Oakleigh	SK 16812 00516	Too small and isolated	CFA21
Water body	North of Drayton Lane, west of Drayton Bassett	SK 16774 00489	Too small and isolated	CFA21
Water body	East of Brockhurst	SK 16781 00503	Lined garden pond	CFA21
Water body	South-east of Brockhurst	SK 16039 01347	Too isolated	CFA21
Water body	West of Oakleigh	SK 16390 01598	Too isolated	CFA21
Water body	East of Roundhill Wood	SK 15964 01942	Does not exist	CFA21
Water body	North of Bangley Hill	SK 16206 01121	Too isolated	CFA21
Water body	North-east of Brockhurst	SK 15430 02320	Too isolated	CFA21
Water body	West of Bourne Brook and Bourne Cut Corridor	SK 15019 02751	Too small and isolated	CFA21
Water body	West of Brockhurst Lane (locally known as Rookery Lane), south-east of Rough Leasow	SK 14721 02846	Too isolated	CFA21
Water body	East of Church Wood	SK 14783 03683	Not present	CFA21
Water body	South of A5, north-west of Weeford	SK 14735 04067	Too isolated	CFA21
Water body	North of Church Wood	SK 15161 03900	Too isolated	CFA21
Water body	South of Church Wood	SK 14710 04095	Too isolated	CFA21
Water body	North of A5, north-east of Weeford	SK 14823 04136	Dry	CFA21
Water body	North-west of Hints	SK 15280 03804	Too isolated	CFA21
Water body	East of Hare Park Wood	SK 14196 04327	Too isolated	CFA21
Water body	South of A5, north-west of Weeford	SK 14442 04353	Man-made garden pond – not suitable	CFA21
Water body	West of Packington Moor	SK 14857 06451	Too isolated	CFA21
Water body	Whittington Health Golf Club	SK 14609 07326	Too isolated	CFA22
Water body	West of Whittington	SK 14867 08315	Too isolated	CFA22
Water body	West of Whittington	SK 14898 08428	Too isolated	CFA22
Water body	West of Whittington	SK 14869 08269	Too isolated	CFA22

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	West of Whittington	SK 14677 08350	Too isolated	CFA22
Water body	South of Wyrley and Essington Canal	SK 15026 08881	Too isolated	CFA22
Water body	South of Wyrley and Essington Canal	SK 14975 08803	Too far from watercourse	CFA22
Water body	West of Huddlesford	SK 14628 09512	Field drain, fairly isolated and mostly dry	CFA22
Water body	East of Fulfen Wood	SK 14748 09439	Isolated field drain along road	CFA22
Water body	North of Streethay	SK 14579 10131	Too isolated	CFA22
Water body	North-east of Streethay	SK 14453 10812	Too isolated	CFA22
Water body	North-east of Streethay	SK 14370 10720	Too isolated	CFA22
Water body	North-east of Streethay	SK 14323 10798	Too isolated	CFA22
Water body	North-east of Streethay	SK 14348 10853	Too isolated	CFA22
Water body	West of Fradley Park	SK 13959 12566	Tank	CFA22
Water body	West of Fradley Park	SK 14458 12203	Over 100m from the land required for construction of the Proposed Scheme	CFA22
Water body	West of Fradley Park	SK 14040 12215	Dry	CFA22
Water body	Fradley Wood	SK 13467 13297	Dry	CFA22
Water body	South of Little Lyntus Wood	SK 13509 12755	Too isolated	CFA22
Water body	Fradley Wood	SK 13794 13277	Dry	CFA22
Water body	Fradley Wood	SK 13088 13053	Dry	CFA22
Water body	Fradley Wood	SK 13885 13385	Dry	CFA22
Water body	Fradley Wood	SK 13621 13305	Dry	CFA22
Water body	Fradley Wood	SK 13620 13282	Dry	CFA22
Water body	Fradley Wood	SK 13613 13680	Dry	CFA22
Water body	Fradley Wood	SK 13500 13404	Dry	CFA22
Water body	West of Fradley Lock	SK 13172 14029	over 100m from the land required for construction of the Proposed Scheme	CFA22
Water body	Brokendown Wood	SK 13291 13581	Dry	CFA22
Water body	Brokendown Wood	SK 13363 13469	Not present	CFA22
Water body	West of Brokendown Wood	SK 13484 13699	Dry	CFA22
Water body	Ravenshaw Wood	SK 12161 13744	Dry	CFA22
Water body	West of Ravenshaw Wood	SK 11759 14096	Dry	CFA22
Water body	North of Tomhay Wood	SK 11672 13751	Not present	CFA22
Water body	East of Kings Bromley Marina	SK 12247 14253	Over 100m from watercourse	CFA22
Water body	East of Kings Bromley Marina	SK 11737 14500	Dry	CFA22

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	East of Kings Bromley Marina	SK 12275 14285	Over 100m from watercourse	CFA22
Water body	East of Kings Bromley Marina	SK 12196 14684	Over 100m from watercourse	CFA22
Water body	South of Kings Bromley Marina	SK 10631 14274	Too isolated	CFA22
Water body	East of Harveys Rough	SK 10469 14394	Too isolated	CFA22
Water body	North-east of Harveys Rough	SK 10248 14572	Too isolated	CFA22
Water body	Hanch Reservoir	SK 10220 13715	over 100m from the land required for construction of the Proposed Scheme	CFA22
Water body	East of Ashton Hays	SK 10340 14619	Not present	CFA22
Water body	East of Ashton Hays	SK 10328 14628	Too isolated	CFA22
Water body	North-east of Harveys Rough	SK 10241 14456	Too isolated	CFA22
Water body	North-east of Harveys Rough	SK 10462 14344	Too isolated	CFA22
Water body	Newtown	SK 10362 14650	Dry	CFA22
Water body	North of Hanch Reservoir	SK 10425 14560	Dry	CFA22
Water body	North of Ashton Hays	SK 09411 14960	Too isolated	CFA22
Water body	East of Handsacre	SK 09424 15294	Too isolated	CFA22
Water body	East of Handsacre	SK 09428 15308	Too isolated	CFA22

3.3 Deviations, constraints and limitations

3.3.1 Deviations from the standard methodology for otter surveys had to be made on several watercourses due to access constraints. Where access was granted late in the survey period, four survey visits conducted at approximately three-monthly intervals could not be undertaken and thus in some instances the spacing of surveys and the total number of surveys had to be reduced.

3.3.2 The otter surveys encountered the following limitations:

- an ornamental pond within Dallas Burston Polo Club (030-OT2-127001) in CFA16 was subject to only one survey due to late land access permission. However, due to the relatively isolated nature of this pond this was not considered to be a significant limitation to survey effort;
- access permission to the River Itchen in CFA16 (030-OT2-126001) was obtained in June 2013, with moderate access. Only one survey was conducted on the River Itchen for otter and survey was possible at the point at which the route of the Proposed Scheme would cross. Surveys of the River Itchen were considered to be limited for otter, although evidence of otter was found along the River Itchen including active holts;
- access to small reaches of the unnamed tributary watercourse of the River Leam in the woodland at Ash Beds in CFA17 (030-OT1-131001) was restricted

by dense scrub. However due to the poor bank structure on this reach of watercourse and the small amount of watercourse not surveyed it is unlikely to conceal holt features and thus not considered to be a significant limitation to survey effort on this watercourse;

- the northern banks of the River Leam in CFA17 (030-OT2-132002) were inaccessible due to no access permission and full detailed assessment was not possible. Therefore features with the potential to support otter holts on this watercourse was not subject to detailed inspection although the southern bank of the watercourse was accessible and this was not considered to be a significant limitation to the survey effort on this watercourse;
- an unnamed drainage ditch associated with the M6 (030-OT2-161003) in CFA19 was subject to only one survey due to late land access permission. However, due to the disturbed and exposed nature of the drain this was not considered to be a significant limitation to survey effort;
- an unnamed tributary watercourse of the River Cole in CFA19 (030-OT2-161004) was only subject to three surveys due to late land access permission. Due to the subsequent records of presence of otter on the River Cole this was not considered to be a significant limitation to survey effort;
- an approximate 50m reach of the southern section of an unnamed Drain – M6 drainage (Tributary of the Cole) in CFA19 (030-OT2-161003) could not be fully surveyed due to the presence of cattle, including bulls (landowner advised surveyors not to enter the land). However due to its small size, exposed and open nature and the disturbance associated with the M6 motorway it is considered unlikely to conceal holt features and is not considered a significant limitation to survey effort on this watercourse;
- two water bodies in CFA20 (unnamed drain near Middleton Hall 030-OT2-168001, and an unnamed tributary of the Langley Brook near Middleton Hall 030-OT2-168002) were subject to two surveys due to late access permission. This was not considered to have significantly limited survey effort for otter as the immediately adjacent Birmingham and Fazeley Canal was subject to full survey;
- the Langley Brook in CFA20 and associated pond (030-OT2-171001 and 030-OT2-171002) were only subject to three surveys due to late land access permission. Due to the subsequent records of presence of otter on the Langley Brook this was not considered to be a significant limitation to survey effort;
- a pond located to the north-east of Brock Hurst Farm 030-OT2-176004 in CFA21 was subject to only one survey due to late land access permission. However, due to the location of this pond outside of the land required for the construction of the Proposed Scheme this was not considered to be a significant limitation to survey effort;
- an unnamed tributary watercourse of the Fisherwick Brook in CFA22 (030-OT2-183001) was subject to two surveys due to late access permission. This was not considered to have significantly limited survey effort for otter as large

immediately adjacent Coventry Canal was subject to full survey; and

- an unnamed pond (030-WV1-188003) in Brokendown Wood in CFA22 was not surveyed as the steep banks were considered a health and safety risk. However this water body was considered unsuitable for otter due to its stagnant and shallow nature (based on Phase 1 habitat survey results) and lack of detailed survey was not considered to be a significant limitation to survey effort.

3.3.3 The watercourses and water bodies where no surveys were possible due to access limitations are presented in Table 183.

Table 183: Watercourses/water bodies with no access in CFA16 to CFA22 inclusive

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	CFA number
030-OT-116001	Berry Hill plantation	Terrestrial site	SP4632653964	CFA16
030-OT-119001	Unnamed Drain at Church Farm (Drains to Tributary of Itchen)	Drain	SP4472556025 to SP4464955720	CFA16
030-OT-120001	Unnamed tributary watercourse of the River Itchen	Ordinary watercourse	SP4375456474 to SP4457156487	CFA16
030-OT-120002	River Itchen (source to conf with R Stowe)	Ordinary watercourse	SP4438757138 to SP4364656760	CFA16
030-OT-120003	Chapel Bank Cottage ponds	Terrestrial site and ponds	SP4416557027	CFA16
030-OT-122001	Unnamed tributary watercourse of the River Itchen at Ladbroke	Ordinary watercourse	SP4276658348 to SP4346358780	CFA16
030-OT-122002	Unnamed Drain at Ladbroke (Drains to Tributary of Itchen)	Drain	SP4282858339 to SP4284858169	CFA16
030-OT-122003	Ladbroke Fox Covert	Terrestrial site	SP4299758236	CFA16
030-OT-122006	Pond to immediate north of Ladbroke Fox Covert	Pond	SP4295358368	CFA16
030-OT-122007	Pond to northwest of Ladbroke Fox Covert	Pond	SP4285458348	CFA16
030-OT-123004	Pond A to east of Banbury Road, Ladbroke	Pond	SP4180159555	CFA16
030-OT-123005	Pond B to east of Banbury Road, Ladbroke	Pond	SP4184459624	CFA16
030-OT-126002	Unnamed tributary watercourse of the River Itchen associated with landfill site	Ordinary watercourse	SP4002561355 to SP3989561331	CFA16
030-OT-126003	Unnamed tributary watercourse of the River Itchen at Lower Farm	Ordinary watercourse	SP3976761613 to SP4006661459	CFA16
030-OT-126005	Field pond near to tributary of the River Itchen	Pond	SP3976761613	CFA16
030-OT-127003	Unnamed tributary watercourse of the River Itchen at Bascote Heath	Ordinary watercourse	SP3961562443 to SP4004962596	CFA16

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	CFA number
030-OT-127004	Thorpe Rough (Fox Covert)	Terrestrial site	SP4002762520	CFA16
030-OT-127005	Drain south of Long Itchington Wood	Drain	SP3914062418 to SP3896462353	CFA16
030-OT-129001	Unnamed tributary watercourse of the River Leam	Ordinary watercourse	SP3779563837 to SP3882864104	CFA17
030-OT-129003	Unnamed tributary watercourse of the River Leam at Lower Print Farm	Ordinary watercourse	SP3863664030 to SP3863764401	CFA17
030-OT-129004	Grand Union Canal woodland	Terrestrial site	SP3822863895	CFA17
030-OT-129005	Pond to south of Grand Union Canal near Welsh Road Bridge	Pond	SP3849163869	CFA17
030-OT-129006	Pond to south of Grand Union Canal near Longhole Bridge	Pond	SP3813163836	CFA17
030-OT-132001	Unnamed Drain (Draining to the Leam) at Manor Farm, Offchurch	Drain	SP3604766311 to SP3648565959	CFA17
030-OT-133002	Pond to north of River Leam at Lower Grange, Cubbington	Pond	SP3552267450	CFA17
030-OT-135001	Pingle brook	Ordinary watercourse	SP3463068410 to SP3469468702	CFA17
030-OT-135004	North Cubbington Wood	Terrestrial site	SP3509769356	CFA17
030-OT-136001	Unnamed tributary watercourse A of River Avon	Ordinary watercourse	SP3457869996 to SP3485569742	CFA17
030-OT-136002	Unnamed tributary watercourse B of River Avon	Ordinary watercourse	SP3457869996 to SP3528669496	CFA17
030-OT-136004	Unnamed tributary watercourse of River Avon at Cotton Mill Spinney	Ordinary watercourse	SP3339369930 to SP3388169593	CFA17
030-OT-136006	Pond at Furzen Hill Farm	Pond	SP3456370059	CFA18
030-OT-141009	Unnamed woodland associated with Finham Brook	Terrestrial site	SP3111673565	CFA18
030-OT-143003	Pond in Crackley Wood	Pond	SP2905974332	CFA18
030-OT-161006	Unnamed woodland associated with the River Cole	Terrestrial site	SP1901089192	CFA19
030-OT-168003	Unnamed Stream at Middleton House Farm (Tributary of Middleton Hall Catch (tributary of Langley Brook))	Ordinary watercourse	SP1866996133 to SP1937296134	CFA20
030-OT-168007	North Wood	Terrestrial site	SP1906995741	CFA20
030-OT-168008	Drains in North Wood	Drain	SP1917096002	CFA20

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	CFA number
030-OT-168010	Drain associated with Kingsbury Water Park	Drain	SP2006595765 to SP2008796215	CFA20
030-OT-169001	Unnamed Stream at Maple Leaf Farm (Tributary of Middleton Hall Catch (tributary of Langley Brook))	Ordinary watercourse	SP1953096908 to SP1829896817	CFA20
030-OT-169002	Unnamed Stream at Pool House Farm (Tributary of Langley Brook)	Ordinary watercourse	SP1947497042 to SP1829896817	CFA20
030-OT-169003	Pond to north of Maple Leaf Farm	Pond	SP1872196489	CFA20
030-OT-170004	Pond at Middleton Quarry	Pond	SP1896297155	CFA20
030-OT-171003	Pool head plantation and Middleton pool	Terrestrial site	SP1899198205	CFA20
030-OT-173010	Pond to south of Shirral Drive, Drayton Bassett	Pond	SK1721700088	CFA21
030-OT-183004	Pond to north of Wyrley and Essington Canal, Whittington	Pond	SK1495909493	CFA22
030-OT-183005	Pond to north of Wyrley and Essington Canal, Whittington	Pond	SK1500009516	CFA22
030-OT-184002	Pond in Fulfen Wood, Whittington	Pond	SK1466809656	CFA22
030-OT-184003	Pond A to east of Fulfen Wood	Pond	SK1483709824	CFA22
030-OT-184004	Pond B to east of Fulfen Wood	Pond	SK1486709718	CFA22
030-OT-185002	2 x large ponds to north of Mare Brook, Streethay	Ponds	SK1412111478	CFA22
030-OT-186007	Pond A to west of unnamed watercourse at Fradley Business Park	Pond	SK1398911962	CFA22
030-OT-186008	Pond B to west of unnamed watercourse at Fradley Business Park	Pond	SK1404212008	CFA22
030-OT-188005	Big Lyntus Wood	Terrestrial site	SK1312412976	CFA22
030-OT-189007	Unnamed Drain (Becomes a tributary of the Pyford Brook Catchment (tributary of River Trent))	Drain	SK1201014287 to SK1245214676	CFA22
030-OT-190007	Vicars Coppice	Terrestrial site	SK1107813815	CFA22
030-OT-190009	Marina	Pond	SK1133814751	CFA22
030-OT-190010	St John's Gorse	Terrestrial Site	SK1070914122	CFA22
030-OT-192002	Pond associated with unnamed drain, Handsacre	Pond	SK0963615398	CFA22

3.4 Baseline

Overview

- 3.4.1 National and county (Warwickshire) surveys indicate otter re-colonisation in the Avon/Severn catchment, and it was concluded by the national surveys that most main rivers on the Avon catchment were used by otters by 2009-2010, but with many of the minor watercourses yet to be re-colonised¹⁸⁸.
- 3.4.2 Warwickshire county surveys undertaken in 2012 indicate signs of otter activity in the Avon and Tame catchments (including records on the River Avon, River Cole, River Tame, Grand Union Canal, Black-Bourne Brook, Coventry Canal, Oxford Canal, Finham Brook, Canley Brook, River Itchen, River Leam and Langley Brook). However, while surveys indicate an expansion in the distribution of otter over the last decade it is thought likely that the population within this catchment has remained small (with numbers in single figures), dispersed and transient. The evidence from the county surveys suggested that otters were breeding in Warwickshire.
- 3.4.3 The Severn catchment (inclusive of the Avon sub catchment) was also considered of key importance to the continued national re-colonisation of otter through provision of aquatic corridors between previously unconnected otter populations in the South Wales and Wye catchments to the Wessex Region and the Upper Thames catchment. The importance of this connectivity for gene flow and for the resilience of the whole otter population is thought to be considerable.
- 3.4.4 The Proposed Scheme within Staffordshire falls within the Trent catchment. Otter distribution in England shows a trend of continued expansion throughout this catchment over the past 30 years¹⁸⁹. This correlates with the re-colonisation of otters throughout the majority of England from near extinction, a recovery attributed to the ban of pesticides in the 1960s and early 1970s, the legal protection status of the otter since 1978 and the significant improvement in water quality in rivers since the 1970s¹⁹⁰.
- 3.4.5 Otter re-colonisation in Staffordshire shows a continued increase in otter presence with otters recorded using all river catchments within the county¹⁹¹.
- 3.4.6 It is the opinion of Paul Chanin (international mammal and otter specialist) that over the coming years the otter populations in Warwickshire and Staffordshire will continue to increase and that eventually all watercourses within the Warwickshire and Staffordshire catchments will be used by otters¹⁹².

CFA16 Ladbroke and Southam

- 3.4.7 There are eight watercourses and 12 water bodies within the Ladbroke and Southam area.

¹⁸⁸ Crawford (2010), *Fifth otter survey of England 2009-2010 Technical Report*, Environment Agency.

¹⁸⁹ Crawford (2010), *Fifth otter survey of England 2009-2010 Technical Report*, Environment Agency.

¹⁹⁰ Crawford (2010), *Fifth otter survey of England 2009-2010 Technical Report*, Environment Agency.

¹⁹¹ United Kingdom Biodiversity Action Reporting System, Staffordshire Biodiversity Action Plan – Action Plan Details: http://ukbars.defra.gov.uk/archive/plans/lbap_complete_plan.asp?X=%7B4457D170-9019-483E-897B-9C518EC003E9%7D&LBAP=%7B4D8B18BA-09F9-4B68-8241-EF1A3B201174%7D&CO, Accessed 15 August 2012.

¹⁹² Pers. Comm. Paul Chanin (mammal expert) with Atkins ecologists, August 2012.

- 3.4.8 The Proposed Scheme directly crosses four watercourses, including the Oxford Canal (030-OT2-118001), the River Itchen at two locations (030-OT-120002 and 030-OT2-126001) and two unnamed tributary watercourses of the River Itchen (030-OT-120001 and 030-OT-122001).
- 3.4.9 There are three unnamed tributary watercourses of the River Itchen (030-OT2-123001 and 030-OT-127003 and five water bodies (unnamed drain at Church Farm 030-OT-119001, fish ponds near Lower Radbourne at Chapel Bank Cottage 030-OT-120003, a pond to immediate north of Ladbroke Fox Covert 030-OT-122006, a field pond near to tributary of River Itchen 030-OT2-123002 and an ornamental pond within Dallas Burston Polo Club 030-OT1-127001) located within the land required for the construction of the Proposed Scheme.
- 3.4.10 A further two unnamed tributaries of the River Itchen (unnamed tributary watercourse of the River Itchen associated with landfill site 030-OT-126002 and unnamed tributary watercourse at Lower Farm 030-OT-126003) and seven water bodies (unnamed drain at Ladbroke 030-OT-122002, a pond to the north-west of Ladbroke Fox Covert 030-OT-122007, pond A to the east of Banbury Road, Ladbroke 030-OT-123004, pond B to the east of Banbury Road, Ladbroke 030-OT-123005, a field pond near the tributary of River Itchen 030-OT-126005, a drain running through Long Itchington and Ufton Wood SSSI 030-OT1-127002 and a drain south of Long Itchington Wood 030-OT-127005) are located outside the land required for the construction of the Proposed Scheme.
- 3.4.11 The following watercourses and water bodies have been surveyed for otter:
- Oxford Canal (030-OT2-118001);
 - unnamed tributary watercourse of the River Itchen (030-OT2-123001);
 - River Itchen (030-OT2-126001);
 - one ornamental pond within the Dallas Burston Polo Club (030-OT1-127001); and
 - drain through Long Itchington and Ufton Wood SSSI (030-OT1-127002).
- 3.4.12 Table 184 gives a summary of otter holts identified through survey.

Table 184: Summary of holts, potential holts and couches recorded during survey of CFA16

Ecology survey code	Watercourse or water body name	OS grid reference	Nature of record	Distance from Proposed Scheme (m) and orientation
030-OT2-126007	River Itchen	SP4032061611	Confirmed holt	70m north-east
030-OT2-126008	River Itchen	SP4043261705	Potential holt	220m north-east
030-OT2-126006	River Itchen	SF4029661565	Potential holt	20m north-east

- 3.4.13 Watercourses where surveys have confirmed the presence of otter through identification of field signs (such as spraints, sightings or footprints) are as follows:
- Oxford Canal – 12 spraints recorded (age ranging from fresh to old) beneath canal bridges between SP43027 55056 and SP47096 47850. The closest was adjacent to the land required for construction of the Proposed Scheme (540m

from the point where the route of the Proposed Scheme crosses the Oxford Canal). In addition, feeding remains of a (signal) crayfish were also recorded on 25 April 2013 and 20 June 2013; and

- River Itchen – fresh spraint recorded on fallen tree within 3m of potential holt at SF4029661565 recorded on 27 June 2013.

- 3.4.14 Otter presence was confirmed on the Oxford Canal and River Itchen, with one confirmed holt site on the River Itchen.
- 3.4.15 An unnamed tributary watercourse of the River Itchen 030-OT-120001, an unnamed tributary watercourse of the River Itchen at Ladbroke 030-OT-122001 and a further reach of the River Itchen (030-OT-120002), all of which will be directly crossed by the Proposed Scheme alignment were not subject to survey. Based on the direct connectivity of these watercourses with the River Itchen (030-OT2-126003) it is considered that otters would likely utilise at least the closest reaches of these watercourses as foraging and refuge resource and thus presence is assumed.
- 3.4.16 No evidence of otter was found during field surveys on a further unnamed tributary watercourse of the River Itchen (030-OT2-123001). The survey results indicated that the watercourse is dry and lacks connectivity to further watercourse reaches or other suitable habitat features. Otters are therefore considered to be absent from this watercourse.
- 3.4.17 Otters are also assumed absent following initial scoping assessment on the drain running through Long Itchington and Ufton Wood SSSI (030-OT1-127002) and an associated ornamental pond at Dallas Burston Polo Club (030-OT1-127001) due to their isolated nature in relation to further watercourses and thus both the drain and pond were scoped out from further.
- 3.4.18 Likelihood of otter presence is higher on watercourses likely to provide connective corridors to suitable habitat features such as an unnamed tributary watercourse of the River Itchen at Bascote Heath (030-OT-127003) and larger fish stocked pond and lake features at Chapel Bank Cottage near Lower Radbourne (030-OT-120003).
- 3.4.19 Current trends indicate continued re-colonisation of watercourses by otter both nationally and in Warwickshire and thus unless where watercourses are specifically deemed to be unsuitable, baseline presence is assumed on the watercourses within this area.
- 3.4.20 Six terrestrial sites have also been identified within the Ladbroke and Southam area which have the potential to offer breeding habitat for otter. These sites comprise:
- Berry Hill plantation (030-OT-116001) located partially within the land required for the construction of the Proposed Scheme;
 - fish ponds at Chapel Bank Cottage near Lower Radbourne (030-OT-120003) also located partially within the land required for the construction of the Proposed Scheme;
 - Ladbroke Fox Covert (030-OT-122003) located partially within the land required for the construction of the Proposed Scheme;

- Hill Farm Wood associated with the River Itchen near Thorpe Bridge (030-OT2-126004) located partially within the land required for the construction of the Proposed Scheme;
- Thorpe Rough (Fox Covert) 030-OT-127004 located outside of the land required for the construction of the Proposed Scheme; and
- Ladbroke Fox covert (030-OT-122003) located partially within the land required for the construction of the Proposed Scheme.

3.4.21 Of these, Hill Farm Wood was surveyed and an otter holt recorded. This woodland is associated with the River Itchen near Thorpe Bridge (030-OT2-126004) and offers areas of dense under storey providing areas of suitable cover and is close to the River Itchen which, due to its size, offers good foraging habitat. There has been no access to the other terrestrial sites within this area.

CFA17 Offchurch and Cubbington

- 3.4.22 There are 10 watercourses and four water bodies within the Offchurch and Cubbington area.
- 3.4.23 The two main watercourses comprise the River Leam (030-OT2-132002) and the Grand Union Canal (030-OT2-129002). Both are directly crossed by the route of the Proposed Scheme.
- 3.4.24 Two further small unnamed watercourses are crossed directly by the route of the Proposed Scheme within this area, comprising an unnamed tributary of the River Leam to the south of the Grand Union Canal (030-OT-129001) and a further unnamed tributary of the River Leam at the woodland at Ash Beds (030-OT2-131002).
- 3.4.25 There are five watercourses located within the land required for the construction of the Proposed Scheme, comprising the Pingle Brook (030-OT-135001) and four further unnamed watercourses (an unnamed tributary watercourse A of the River Avon 030-OT-136001, an unnamed tributary watercourse B of the River Avon 030-OT-136002, an unnamed tributary watercourse of the River Avon 030-OT2-136003 and an unnamed tributary watercourse of the River Avon at Cotton Mill Spinney 030-OT-136004).
- 3.4.26 There are three water bodies (a pond to south of Grand Union Canal near Welsh Road Bridge 030-OT-129005, a pond to south of Grand Union Canal near Longhole Bridge 030-OT-129006 and an unnamed drain draining into the River Leam 030-OT-132001) located within the land required for the construction of the Proposed Scheme.
- 3.4.27 A further unnamed tributary watercourse of the River Leam at Lower Print Farm (030-OT-129003) and one water body (pond to north of River Leam at Lower Grange 030-OT-133002) are located outside the land required for the construction of the Proposed Scheme.
- 3.4.28 The following watercourses and water bodies have been surveyed for otter:
- Grand Union Canal (030-OT2-129002);
 - unnamed tributary of the River Leam (030-OT2-131002);
 - River Leam (030-OT2-132002); and

- unnamed tributary watercourse of the River Avon (030-OT2-136003).

3.4.29 Table 185 gives a summary of otter holts identified through survey.

Table 185: Summary of holts, potential holts and couches recorded during survey of CFA17

Ecology survey code	Water course or water body name	OS grid reference	Nature of record	Distance from the land required for construction of the Proposed Scheme (m) and orientation
030-OT2-129007	Grand Union Canal	SP 3834563912	Potential holt – two holes approximately 30 x 70cm. Spoil from former excavation although no signs of use.	10m west
030-OT2-132004	River Leam	SP 3552767231	Potential holt – debris covering overhanging branches on far bank (access restricted).	270m south-west
030-OT2-132005	River Leam	SP 3577567063 to SP 3579766883	Potential holt – flooding debris and dense growth of scrub and mature trees on very steep bank (access restricted).	100m south-west
030-OT2-132006	River Leam	SP 3559067344	Potential holt – debris over roots of mature willow trees (access restricted).	180m south-west
030-OT2-132007	River Leam	SP 3612667692	Potential holt – under overhanging willow tree (access restricted).	110m north-east
030-OT2-132008	River Leam	SP 3628867744	Potential holt – mussel shell at entrance under tree roots. No evidence of otter present (access restricted).	270m north-east

3.4.30 Watercourses where surveys have confirmed the presence of otter through identification of field signs (such as spraints, sightings or footprints) are as follows:

- Grand Union Canal – six spraint sites recorded (age ranging from fresh to old) beneath canal bridges between SP43027 55056 and SP38072 63966 recorded between 21 August 2012 and 06 March 2013. Otter feeding remains were also found between SP43027 55056 and SP38072 63966 on 20 June 2013; and
- River Leam – 24 spraints recorded (age ranging from fresh to old) along river corridor between SP36059 67665 and SP355616770467405 recorded between 18 September 2012 and 23 May 2013.

3.4.31 Otters are present on both the Grand Union Canal and River Leam.

3.4.32 An unnamed tributary watercourse of the River Leam at Ash Beds (030-OT2-131002) and a further unnamed tributary watercourse of the River Avon (030-OT2-136003) were deemed to offer limited suitability for otters (providing some suitable foraging and cover features) and no evidence of otters was found during field surveys. These watercourses have connectivity with the River Leam and River Avon respectively but provide little connectivity to further watercourse reaches and are unlikely to be used for commuting.

3.4.33 An unnamed tributary watercourse of the River Leam (030-OT-129001) and unnamed tributary watercourse of the River Leam at Lower Print Farm (030-OT-129003) were not subject to survey. Based on the immediate locality and connectivity of these watercourses with the Grand Union Canal it is considered likely that otters would

utilise at least the closest reaches of these watercourses as a foraging and refuge resource.

- 3.4.34 A further four watercourses within this area were not subject to survey, comprising the Pingle Brook (030-OT-135001) and three further unnamed tributary watercourses of the River Avon (030-OT-136001, 030-OT-136002 and 030-OT-136004). These watercourses also have either connectivity with the River Leam or River Avon although offer limited connectivity to any further watercourse, water body or terrestrial resource.
- 3.4.35 Due to the immediate aquatic connectivity between the River Leam and an unnamed drain draining into the River Leam (030-OT-132001), which was not subject to survey, it is likely that otters associated with the River Leam may at least utilise the closest reaches of this drain as a refuge resource. This drain offers poor connectivity to further resources for otter to utilise.
- 3.4.36 Water bodies within this area (pond to south of Grand Union Canal near Welsh Road Bridge 030-OT-129005, pond to south of Grand Union Canal near Longhole Viaduct 030-OT-129006 and pond to north of River Leam at Lower Grange, Cubbington 030-OT-133002) are unlikely to be utilised by otter other than as an occasional seasonal foraging resource due to their small size and as they are not stocked with fish.
- 3.4.37 Current trends indicate continued re-colonisation of watercourses by otter both nationally and in Warwickshire and thus unless where watercourses are deemed to be unsuitable, baseline presence is assumed on the watercourses within this area.
- 3.4.38 Three terrestrial sites have also been identified within this area, which have potential to offer breeding habitat for otter. These sites are all within the land required for construction of the Proposed Scheme and comprise:
- unnamed woodland to the south of Grand Union Canal (030-OT-129004);
 - Ash Beds wood (030-OT-132003); and
 - North Cubbington Wood (030-OT-135004).
- 3.4.39 Of these Ash Beds wood has been assessed and was classed as having medium suitability for otters to utilise for potential breeding habitat due to its dense under storey which offers areas of suitable cover and is in the locality of the River Leam which, due to its size would likely offer good food supply. However the unnamed tributary watercourse of the River Leam at Ash Beds provides little connectivity to further watercourse reaches which makes the woodland less likely to be used by otter. No evidence of otter has been found within this terrestrial site. There has been no access to the other terrestrial sites within this area.

CFA18 Stoneleigh, Kenilworth and Burton Green

- 3.4.40 There are 11 watercourses and 12 water bodies within the Stoneleigh, Kenilworth and Burton Green area.
- 3.4.41 The Proposed Scheme directly crosses five watercourses and one water body, including the River Avon (030-OT2-139001), Finham Brook (030-OT2-141001), Canley Brook (030-OT2-141002), two unnamed tributary watercourses of the Canley Brook

(030-OT1-142001 and 030-OT2-145001) and an unnamed drain of the Canley Brook (030-OT2-146001).

- 3.4.42 There are four watercourses and four water bodies located within the land required for the construction of the Proposed Scheme, comprising an unnamed tributary watercourse of the River Avon (030-OT2-136003), a reach of the River Avon (030-OT2-138001), an unnamed tributary watercourse of the River Avon associated with Hare's Parlour (030-OT2-138002), an unnamed tributary watercourse of the River Avon in the west of unnamed woodland (030-OT2-139003) and four water bodies (a pond at Furzen Hill Farm 030-OT-136006, ponds to the north of Dalehouse Farm 030-OT2-141004, a pond to the north of Dalehouse Farm 030-OT2-141005 and a pond to the east of Dalehouse Farm 030-OT1-141007).
- 3.4.43 There are a further two watercourses (River Sowe 030-OT2-139001 and unnamed tributary watercourse of the River Avon in the east of unnamed woodland 030-OT2-139004) and seven ponds (a pond to the south of Dalehouse Farm 030-OT1-141003, a pond to the south of Milburn Grange 030-OT2-141006, a pond in Crackley Wood 030-OT-143003, a pond at South Hurst Farm 030-OT2-144004, a pond near Brockendon Grange Farm 030-OT1-145004, two ponds in Broadwells Wood, in the south 030-OT1-145005 and one in the north 030-OT1-145006) located outside the land required for the construction of the Proposed Scheme within the Stoneleigh, Kenilworth and Burton Green area.
- 3.4.44 The following watercourses and water bodies have been surveyed for otter:
- unnamed tributary watercourse of River Avon (030-OT2-136003);
 - River Avon (030-OT2-138001 and 030-OT2-139001);
 - unnamed tributary watercourse of River Avon at Hare's Parlour (030-OT2-138002);
 - unnamed tributary watercourse of River Avon in west of unnamed woodland (030-OT2-139003);
 - unnamed tributary watercourse of River Avon in east of unnamed woodland 030-OT2-139004);
 - River Sowe (030-OT2-139002);
 - Finham Brook (030-OT2-141001);
 - Canley Brook (030-OT2-141002);
 - two unnamed tributary watercourses of the Canley Brook (030-OT2-145001 and 030-OT1-142001);
 - unnamed drain of the Canley Brook (030-OT2-146001); and
 - nine water bodies (pond to the south of Dalehouse Farm 030-OT1-141003, ponds to the north of Dalehouse Farm 030-OT2-141004, pond to the north of Dalehouse Farm 030-OT2-141005, pond to the south of Milburn Grange 030-OT2-141006, pond to the east of Dalehouse Farm 030-OT1-141007, pond at South Hurst Farm 030-OT2-144004, pond near Brockendon Grange Farm 030-

OT1-145004, two ponds in Broadwells Wood 030-OT1-145005 and 030-OT1-145006).

3.4.45 Table 186 gives a summary of otter holts identified through survey.

Table 186: Summary of holts, potential holts and couches recorded during survey of CFA18

Ecology survey code	Watercourse or water body name	OS grid reference	Nature of record	Distance from the land required for construction of the Proposed Scheme (m) and orientation
030-OT2-139007	River Avon (030-OT2-139001)	SP31818 72042	Potential holt. Fallen tree surrounded by thick vegetation and bramble.	160m south-west
030-OT2-142002	Unnamed tributary watercourse of the Canley Brook (030-OT2-142001)	SP30083 74061	Two potential holts under tree roots.	Within land required
030-OT2-146003	Unnamed drain (draining to the Canley Brook) (030-OT-146001)	SP2814875182	Potential holt site under bridge.	Within land required
030-OT2-146004	Unnamed drain (draining to the Canley Brook) (030-OT-146001)	SP282754	Potential holt site under tree roots.	210m north

3.4.46 Watercourse reaches where surveys have confirmed the presence of otter through identification of field signs (such as spraints, sightings or footprints) are as follows:

- River Avon (030-OT2-139001) – three spraints recorded (ranging from fresh to old) between SP3287972471 and SP3167871934 between 23 April 2013 and 19 June 2013; and
- River Avon (030-OT2-138001) – ten spraints recorded (ranging from fresh to old) between SP3331271724 and SP3243272377 between 15 August 2012 and 19 June 2013.

3.4.47 Otters are currently present on the River Avon and desk study records suggest that otters are breeding on the River Avon¹⁹³. Otter presence is also assumed on the River Sowe due to their presence on the immediately adjacent River Avon near the confluence.

3.4.48 Surveys did not confirm the presence of otters on the Canley Brook or the Finham Brook. However desk study records indicate the presence of otter on these watercourses. There are eight records of otter (spraints) on the Canley Brook between 2007 and 2011, the closest of which is located within the land required for the construction of the Proposed Scheme. There are two records (spraints) on the Finham Brook in 2007, the closest of which is 520m north-east of the Proposed Scheme.

3.4.49 Three ponds (pond to south of Dalehouse Farm 030-OT1-141003, pond near Brockendon Grange Farm 030-OT1-145004, and the southern pond in Broadwells Wood 030-OT1-145005) and an unnamed tributary watercourse of the Canley Brook (030-OT1-142001) were unsuitable for otters due to their dry nature or poor quality

¹⁹³ Pers. Comm. between Katrena Stanhope (Atkins) and Peter Sanders (County Recorder – Warwickshire Wildlife Trust) 11/07/12.

habitat. A further pond (northern pond in Broadwells Wood 030-OT1-145006) was a heavily shaded shallow, woodland pond and was also unsuitable for otters.

- 3.4.50 The remainder of water bodies within the Stoneleigh, Kenilworth and Burton Green area are unlikely to be used by otters due to their size, location and as they are not stocked with fish.
- 3.4.51 Based on the immediate locality and direct connectivity of the remainder of watercourses within this area with the River Avon, Canley Brook and Finham Brook it is considered that otters are likely to utilise at least the closest reaches as a foraging and refuge resource. Therefore, unless the watercourses are unsuitable, the presence of otter is assumed on the watercourses within this area.
- 3.4.52 Nine terrestrial sites have also been identified which have potential to offer breeding habitat for otter. These sites are all within or adjacent to the land required for construction of the Proposed Scheme and comprise Decoy Spinney (030-OT2-137001), Hare's Parlour, (030-OT-138004), unnamed woodland at Stareton (030-OT2-138006), Gilberts Spinney (030-OT2-138005), two further unnamed woodlands (030-OT-139006 and 030-OT-141009), Crackley Wood (030-OT2-143001), Roughknowles Wood (030-OT2-143002) and Broadwells Wood (030-OT2-145002). Detailed assessments have been undertaken for six of these terrestrial habitat features.
- 3.4.53 Crackley Wood and Roughknowles Wood were classed as having a low suitability for potential breeding habitat due to their lack of suitable cover, despite being close to moderate food supply associated with Canley Brook and its tributaries.
- 3.4.54 Decoy Spinney and Broadwells Wood were classed as having medium suitability as potential breeding habitat for otters due to their moderate quality cover and food supply.
- 3.4.55 Gilberts Spinney and the unnamed woodland at Stareton were classed as having high suitability for potential breeding habitat. This is based on its dense impenetrable cover, the presence of features with potential to conceal a breeding den and their proximity to the River Avon, a watercourse with a high quality food supply (based on existing Environment Agency routine monitoring data and fish habitat survey).
- 3.4.56 No evidence of current otter breeding sites was identified at any of the six sites surveyed. There has been no access to the other terrestrial sites within this area.

CFA19 Coleshill Junction

- 3.4.57 There are eight watercourses within the Coleshill Junction area, plus nine water bodies including a flooded lagoon.
- 3.4.58 The Proposed Scheme directly crosses a total of six watercourses within this area, including the River Cole at two locations (030-OT2-160002), the River Tame (030-OT2-164002), three unnamed tributary watercourse of the River Cole at Chelmsley Wood (030-OT1-160001), Coleshill Hall Farm (030-OT1-1610001) Grimstock (030-OT1-162002) and one unnamed tributary watercourse of the River Tame (030-OT1-163001).
- 3.4.59 A flooded lagoon within Coleshill Sewage Works Grassland LWS (030-OT2-164001) and seven further water bodies (pond to the north of the Belt woodland 030-OT1-

162005, pond to the south of the Belt woodland 030-OT1-162006, pond within the Belt woodland 030-OT1-162007, large pond to the south of an unnamed tributary of the River Tame, Water Orton 030-OT1-163003, pond to the north of an unnamed tributary of the River Tame, Water Orton 030-OT1-163004, small pond to the south of an unnamed tributary of the River Tame, Water Orton 030-O1-163005 and a drain into an unnamed tributary watercourse of the River Tame 030-OT1-163006) within this area are located within the land required for the construction of the Proposed Scheme.

- 3.4.60 There are two further unnamed tributary watercourses of the River Cole at the Catmore (030-OT2-161004) and Grimstock (030-OT1-162001) and one water body comprising a drain associated with the M6 motorway (030-WV1-161003) which fall outside of the land required for the construction of the Proposed Scheme.
- 3.4.61 All watercourses and water bodies within the CFA19 area have been surveyed for this species. No confirmed or potential holts were identified.
- 3.4.62 Watercourses where surveys have confirmed the presence of otter through identification of field signs (such as spraints, sightings or footprints) are as follows:
- River Cole – three spraints recorded (old) between SP1927289534 and SP1921887568 between 11 December 2012 and 05 March 2013;
 - River Cole – otter feeding remains comprising (signal) crayfish and fresh water mussel remains present on the river bank amongst vegetation recorded at SP19427 89579 on 18 June 2013;
 - River Cole – spraint (recent) on boulder underneath road bridge at SP 18970 88848 on 13 June 2013; and
 - River Tame – three spraints recorded (fresh) between SP18659181, SP1920591442 between 18 December 2012 and 24 April 2013.
- 3.4.63 Field surveys have confirmed that otters are present on the River Cole (030-OT2-160002) and the River Tame (030-OT2-164002).
- 3.4.64 Based on the direct connectivity between the River Cole and two unnamed tributaries of the River Cole (030-OT2-161004 and 030-OT2-162001) and an unnamed drain associated with the M6 motorway (030-OT2-161003) it is considered likely that otters would utilise at least the closest reaches of these watercourses as a foraging and refuge resource and thus their presence is assumed, despite survey evidence not confirming this.
- 3.4.65 Similarly the flooded lagoon within Coleshill Sewage Works Grassland LWS (030-OT2-164001) would offer suitable refuge and foraging resource for otter.
- 3.4.66 Due to the isolation of reaches of two unnamed tributary watercourses of the River Cole (030-OT1-161001, 030-OT1-162002) and on unnamed tributary watercourse of the River Tame (030-OT1-163001) as a result of extensive reaches being in culvert it is unlikely that otters will be present on these watercourses. Therefore for the purpose of assessment otters are assumed absent from these watercourses and scoped out from further assessment.

- 3.4.67 Two further unnamed tributary watercourses of the River Cole (030-OT1-160001 and 030-OT-161002) were considered to offer sub optimal habitat for otter due to the poor habitat suitability that these watercourses provide (bare banks with a lack of marginal and emergent vegetation cover) and a lack of connectivity with further watercourses and were scoped out from further assessment.
- 3.4.68 Seven further water bodies within this area (pond to north of the Belt woodland 030-OT1-162005, pond to the south of the Belt woodland 030-OT1-162006, pond within the Belt woodland 030-OT1-162007, large pond to the south of an unnamed tributary of the River Tame, Water Orton 030-OT1-163003, a pond to the north of an unnamed tributary of the River Tame, Water Orton 030-OT1-163004, a small pond to the south of an unnamed tributary of the River Tame, Water Orton 030-OT1-163005 and a drain into an unnamed tributary watercourse of the River Tame 030-OT1-163006) are unlikely to be utilised by otter other than occasional seasonal foraging resource due to their small size and not being stocked with fish.
- 3.4.69 Current trends indicate continued re-colonisation of watercourses by otter both nationally and in Warwickshire. Therefore, unless the watercourses are unsuitable, the presence of otter is assumed on the watercourses within this area.
- 3.4.70 Two terrestrial sites have been identified within this area, which have potential to offer breeding habitat for otter. These sites are within the land required for construction of the Proposed Scheme and comprise an unnamed woodland (030-OT-161006) and the Belt woodland (030-OT-162003). A detailed assessment of the Belt has been undertaken.
- 3.4.71 The Belt woodland is close to the River Cole which offers a good food supply (based on existing Environment Agency routine monitoring data and baseline fish habitat quality assessment survey). Despite this proximity, this site was assessed as having low suitability for otter as potential breeding habitat as it offers poor ground cover which would be very unlikely to conceal a breeding den. This site is also relatively isolated from the River Cole as a result of a small culvert as it passes beneath the M6 motorway. No evidence of otter breeding was identified at this site.

CFA20 Curdworth to Middleton

- 3.4.72 There are 10 watercourses and 18 water bodies within the Curdworth to Middleton area.
- 3.4.73 The Proposed Scheme directly crosses all 10 watercourses and two of the water bodies comprising:
- River Tame (030-OT2-164002);
 - two unnamed tributary watercourses of the River Tame (030-OT1-164003 and 030-OT1-164004);
 - Birmingham and Fazeley Canal (030-OT2-167001);
 - two ponds adjacent to the Birmingham and Fazeley Canal (030-OT2-167002 and 030-OT2-167003);
 - four unnamed tributary streams of Middleton Hall, tributaries of Langley

Brook (030-OT2-168002, 030-OT-168003, 030-OT-169001 and 030-OT-169002);

- Langley Brook (030-OT2-171001); and
- Gallows Brook (030-OT2-172002).

3.4.74 There are nine water bodies within the land required for the construction of the Proposed Scheme, comprising two unnamed drains (an unnamed drain that drains to River Tame 030-OT1-165001 and an unnamed drain that drains to Middleton Hall 030-OT2-168001), Cuttle Mill Fisheries Ponds (three ponds 030-OT2-168004, 030-OT2-168005 and 030-OT2-168006) and four unnamed ponds (ponds north of Gallows Brook at Brook Farm, Middleton 030-OT2-172004, a pond close to Gallows Brook at Brook Farm, Middleton 030-OT1-172006, Marl Pit at Brook Farm, Middleton 030-OT1-172007 and a small pond at Brook Farm, Middleton 030-OT1-172008)

3.4.75 A further seven water bodies are located outside the land required for the construction of the Proposed Scheme, comprising the drain in North Wood (030-OT-168008), a drain associated with Kingsbury Water Park, (030-OT-168010), a pond to the north of Maple Leaf Farm (030-OT-169003), ponds adjacent to Coneybury Wood (030-OT2-170002), a pond at Middleton Quarry (030-OT-170004), a large pond alongside Langley Brook (030-OT2-171002) and a small reservoir/fishing lake at Brook Farm, Middleton (030-OT2-172003).

3.4.76 The following watercourses and water bodies have been surveyed for otter activity:

- River Tame (030-OT2-164002);
- two unnamed tributary watercourses of the River Tame (030-OT1-164003 and 030-OT1-164004);
- unnamed drain, drains to River Tame(030-OT1-165001);
- Birmingham and Fazeley Canal (030-OT2-167001);
- two ponds adjacent to the Birmingham and Fazeley Canal (030-OT2-167002 and 030-OT2-167003);
- two unnamed streams (unnamed drain, drains to Middleton Hall 030-OT2-168001 and an unnamed stream tributary of Middleton Hall catchment, tributary of Langley Brook 030-OT2-168002);
- Cuttle Mill Fisheries Ponds (030-OT2-168004, 030-OT2-168005 and 030-OT2-168006);
- seven unnamed ponds (ponds adjacent to Coneybury Wood 030-OT2-170002, large pond alongside Langley Brook 030-OT2-171002, small reservoir/fishing lake at Brook Farm, Middleton 030-OT2-172003, ponds north of Gallows Brook at Brook Farm, Middleton 030-OT2-172004, pond close to Gallows Brook at Brook Farm, Middleton 030-OT1-172006, Marl Pit at Brook Farm, Middleton 030-OT1-172007 and a small pond at Brook Farm, Middleton 030-OT1-172008);
- Langley Brook (030-OT2-171001); and

- Gallows Brook (030-OT2-172002).
- 3.4.77 No confirmed or potential holts were identified. Watercourses where surveys have confirmed the presence of otter through identification of field signs (such as spraints, sightings or footprints) are as follows:
- River Tame (030-OT2-164002) – three spraints recorded (fresh) between SP18659181 and SP1920591442 between 18 December 2012 and 24 April 2013; and
 - Langley Brook (030-OT-171001) – one otter spraint (fresh) at SP1872698127 on 12 June 2013.
- 3.4.78 Otters are present on the River Tame and the Langley Brook.
- 3.4.79 Despite no survey evidence, desk study information suggests otter presence on the Birmingham and Fazeley Canal (records between 2007 and 2009) with the closest record located 10m west of the land required for the construction of the Proposed Scheme.
- 3.4.80 Surveys of the two ponds adjacent to the Birmingham and Fazeley Canal (030-OT2-167002 and 030-OT2-167003), two unnamed streams (unnamed drain, drains to Middleton Hall 030-OT2-168001 and an unnamed stream tributary of Middleton Hall Catchment, tributary of Langley Brook 030-OT2-168002), Cuttle Mill Fisheries Ponds (030-OT2-168004, 030-OT2-168005 and 030-OT2-168006), four unnamed ponds (Ponds adjacent to Coneybury Wood 030-OT2-170002, large pond alongside Langley Brook 030-OT2-171002, small reservoir/fishing lake at Brook Farm, Middleton 030-OT2-172003, ponds north of Gallows Brook at Brook Farm, Middleton 030-OT2-172004,) and the Gallows Brook (030-OT2-172002) deemed these watercourses and water bodies suitable for otter use but surveys did not indicate current presence.
- 3.4.81 Two unnamed tributary watercourses of the River Tame (030-OT1-164003 and 030-OT1-164004), an unnamed drain (030-OT1-165001) and three unnamed ponds (pond close to Gallows Brook at Brook Farm, Middleton 030-OT1-172006, Marl Pit at Brook Farm, Middleton 030-OT1-172007 and a small pond at Brook Farm, Middleton 030-OT1-172008) were unsuitable for otters due to their dry nature, isolation from suitable habitat or concrete lined nature.
- 3.4.82 Three unnamed streams (an unnamed stream, tributary of Middleton Hall at Middleton house Farm 030-OT-168003, an unnamed stream, tributary of Middleton Hall at Maple Leaf Farm 030-OT-169001 and an unnamed stream at Pool House Farm 030-OT-169002), which will be crossed by the Proposed Scheme, have not been subject to survey. Based on their direct connectivity with the Birmingham and Fazeley Canal where otters are assumed to be present, otters are likely to utilise the closest reaches of these watercourses as foraging and refuge resource and thus their presence is assumed.
- 3.4.83 The drain associated with the Kingsbury Water Park Nature Reserve (030-OT-168010) is likely to be utilised by otters for foraging and refuge at the closest reaches due to the presence of otters at the Kingsbury Water Park since the 1980s.

- 3.4.84 The unnamed drain in North Wood (030-OT-168008) and two unnamed ponds (a pond to north of Maple Leaf Farm 030-OT-169003 and a pond at Middleton Quarry 030-OT-170004) are unlikely to be utilised by otter other than occasional seasonal foraging resource due to their small size and not being stocked with fish.
- 3.4.85 Current trends indicate continued re-colonisation of watercourses by otter both nationally and in Warwickshire. Therefore, unless the watercourses are unsuitable, the presence of otter is assumed on the watercourses within this area.
- 3.4.86 Five terrestrial sites with the potential to offer breeding habitat for otter have also been identified within the area. These sites comprise Cuttle Mill Fisheries and Mill Plantation (030-OT2-168009) located adjacent to the land required for the construction of the Proposed Scheme, North Wood (030-OT-168007) which is crossed by the Proposed Scheme, Pool Head Plantation and Middleton Pool (030-OT-171003) adjacent to the land required for the construction of the Proposed Scheme, Walkers Spinney (030-OT2-171004) partially within the land required for construction of the Proposed Scheme and Middleton Hall Farm Quarry site (030-OT2-170001) which falls partially within the land required for the construction of the Proposed Scheme.
- 3.4.87 Detailed assessments of the three terrestrial habitat features with access (Cuttle Mill Fisheries 030-OT2-168009, Middleton Hall Farm Quarry 030-OT2-170001 and Walkers Spinney 030-OT2-171004) have been undertaken and no confirmed breeding sites were identified.
- 3.4.88 Middleton Hall Farm Quarry was classed as unsuitable as a potential breeding habitat due to a lack of suitable cover, despite being close to a potential food supply in the associated lagoons and nearby watercourses.
- 3.4.89 Cuttle Mill Fisheries was classed as having high suitability as a potential breeding habitat due its moderate quality cover and high food supply from the adjacent fishing lakes and nearby Birmingham and Fazeley Canal. Feeding remains (fish skeleton) have been found at the site but otter presence could not be confirmed.
- 3.4.90 Walkers Spinney was classed as having a high suitability for otter due to its dense ground cover offering opportunities and close locality to high quality food resource (Langley Brook) to conceal a breeding den although no otter evidence was found. There has been no access to the other terrestrial sites within this area.

CFA21 Drayton Bassett, Hints and Weeford

- 3.4.91 There are seven watercourses and 11 water bodies within the Drayton Bassett, Hints and Weeford area. One of these water bodies is adjacent to a watercourse within Moor Covert (030-OT2-179001) although the pond does not have its own survey reference.
- 3.4.92 The Proposed Scheme directly crosses a total of six watercourses and one water body, including the Gallows Brook (030-OT2-172002), two unnamed tributary watercourses of the River Tame (030-OT2-173001 and 030-OT1-173002), an unnamed pond (pond to south of Shirral Drive, Drayton Bassett 030-OT-173010), two unnamed tributary watercourses of the Black-Bourne Brook (030-OT1-175001 and 030-OT1-175002) and the Black-Bourne Brook (030-OT2-177001).

- 3.4.93 There are three water bodies located within the land required for the construction of the Proposed Scheme, comprising an unnamed drain becoming a tributary of the Black-Bourne Brook (030-OT1-175002) and two unnamed drains associated with the Black-Bourne Brook (030-OT1-177005 and 030-OT2-177009).
- 3.4.94 A further watercourse (stream and large pond associated with Moor Covert 030-OT2-179001) and six water bodies (a pond to the south of Snake's Hill, Hints 030-OT2-176002, a pond to the north-east of Brock Hurst Farm 030-OT2-176004, a pond to the south of Black-Bourne Brook 030-OT2-177002, a pond to the north of Black-Bourne Brook 030-OT1-177003, an unnamed drain at Bourne House, Weeford 030-OT1-177007 and a pond in Snakes Hill Wood, Hints 030-OT2-177008) are located outside the land required for the construction of the Proposed Scheme.
- 3.4.95 The following watercourses and water bodies have been surveyed for otter activity:
- Gallows Brook (030-OT2-172002);
 - two unnamed tributary watercourses of the River Tame (030-OT2-173001 and 030-OT1-173002);
 - two unnamed tributary watercourses of the Black-Bourne Brook (030-OT1-175001 and 030-OT1-175002);
 - Black-Bourne Brook (030-OT2-177001);
 - an unnamed stream and large pond associated with Moor Covert (030-OT2-179001); and
 - nine water bodies (an unnamed drain at Woodside Farm (becomes a tributary of the Black-Bourne Brook) 030-OT1-174002, a pond to the south of Snakes Hill, Hints 030-OT2-176002, a pond to the north-east of Black-Bourne Brook 030-OT2-176004, a pond to the south of Black-Bourne Brook 030-OT2-177002, a pond to the north of Black-Bourne Brook 030-OT1-177003, an unnamed drain to the immediate east of Black-Bourne Brook 030-OT1-177005, an unnamed drain at Bourne House, Weeford 030-OT1-177007, a pond in Snakes Hill Wood, Hint 030-OT2-177008 and a drain associated with the Black-Bourne Brook 030-OT2-177009).
- 3.4.96 No confirmed or potential holts were identified. Watercourses where surveys have confirmed the presence of otter through identification of field signs (such as spraints, sightings or footprints) are as follows:
- an unnamed pond associated with the Black-Bourne Brook (030-OT2-176002) – one spraint recorded at SK1558402814 on 17 December 2012;
 - one spraint recorded on Bourne Brook at SK157201 602705 on 17 December 2012; and
 - Black-Bourne Brook – old spraint recorded at SK1597502549 on 11 June 2013.
- 3.4.97 Otters are present on the Black-Bourne Brook (030-OT2-177001) and associated large pond (pond to the south of Snakes Hill, Hints 030-OT2-176002). However due to the lack of direct connectivity between the Black-Bourne Brook and other watercourses

within this area the current presence of otter on the Black-Bourne Brook cannot be inferred to indicate their presence on any other watercourses within this area.

- 3.4.98 Surveys on the unnamed tributary of the River Tame at Brook Farm (030-OT2-173001) which is directly crossed by the scheme did not record any current activity. However desk study records indicate otter presence on the River Tame and thus it is assumed that otters will be present on at least the nearby reaches of this watercourse.
- 3.4.99 Gallows Brook (030-OT2-172002) and an unnamed watercourse (stream and large pond associated with Moor Covert 030-OT2-179001) were found to be suitable for otter but their presence was not recorded during surveys.
- 3.4.100 Five of the unnamed water bodies surveyed (a pond to the south of Snakes Hill, Hints 030-OT2-176002, a pond to the north-east of Black-Bourne Brook 030-OT2-176004, a pond to the south of Black-Bourne Brook 030-OT2-177002, a pond in Snakes Hill Wood, Hints 030-OT2-177008 and a drain associated with Black-Bourne Brook 030-OT2-177009) were found to be suitable for otter use but only one (pond to south of Snakes Hill, Hints 030-OT2-176002) had confirmed otter activity (spraints).
- 3.4.101 An unnamed tributary watercourse of the River Tame at Shirral Hall Farm (030-OT1-173002) was deemed unsuitable for all but commuting for otters due to its exposed nature and bare banks.
- 3.4.102 Two unnamed tributary watercourses of the Black-Bourne Brook (030-OT1-175001 and 030-OT1-175002) and three water bodies (an unnamed drain becomes tributary of the Black-Bourne Brook at Woodside Farm 030-OT1-174002, a pond to the north of Black-Bourne Brook 030-OT1-177003, and an unnamed drain at Bourne House, Weeford 030-OT1-177007) were also deemed unsuitable for otters due to their shallow nature and poor vegetation cover.
- 3.4.103 An unnamed water body (an unnamed drain to the immediate east of Black-Bourne Brook 030-OT1-177005) was scoped out as it comprised a swamp drain with no defined bank structure.
- 3.4.104 Current trends indicate continued re-colonisation of watercourses by otter both nationally and in Staffordshire. Therefore, unless the watercourses are unsuitable, the presence of otter is assumed on the watercourses within this area.
- 3.4.105 One terrestrial site has been identified within this area, which has potential to offer breeding habitat for otter. This site is Snake's Hill Wood (030-OT2-176001). Snake's Hill Wood has been assessed for its potential for otters to use as breeding habitat and was assessed as having a moderate potential due to its dense under storey which offers areas of suitable cover and the locality of the Black-Bourne Brook, a watercourse that would likely offer good food supply (based on existing Environment Agency routine monitoring data and fish habitat survey).

CFA22 Whittington to Handsacre

- 3.4.106 There are nine watercourses within the Whittington to Handsacre area, plus 24 water bodies.
- 3.4.107 The Proposed Scheme directly crosses eight watercourses, including the Trent and Mersey Canal at three locations (030-OT2-188001), a disused section of the Wyrley

and Essington Canal (030-OT2-183002), Curborough Brook (030-OT2-188002), Mare Brook (030-OT2-185001) and Bourne Brook (030-OT2-190001), as well as a further two unnamed tributary watercourses of the Mare Brook (030-OT1-184001 and 030-OT2-186001) and one unnamed tributary watercourse of the Fisherwick Brook (030-OT2-183001).

- 3.4.108 Three drains (one drain/stream D in Ravenshaw Wood 030-OT2-189001, one unnamed drain A becomes a tributary of the River Trent 030-OT1-191001 and a second unnamed drain B becomes a tributary of the River Trent 030-OT1-192001) and one pond (pond to the north of Bourne Brook 030-OT1-190005) are also directly crossed by the route of the Proposed Scheme.
- 3.4.109 The Coventry Canal (030-OT2-183003) and ten water bodies (drain/stream B in Ravenshaw Wood 030-OT2-188009, an unnamed drain that becomes a tributary of Pyford Brook 030-OT-189007, a pond associated with tributary of Mare Brook 030-OT2-186002, the northern pond at Fradley Business Park 030-OT1-186005, the eastern pond at Fradley Business Park 030-OT1-186006, a pond to the west of Curborough Brook 030-OT-186007, a pond to the west of the unnamed watercourse at Fradley Business Park 030-OT-186008, a pond to the south of the Trent and Mersey Canal 030-OT1-188003, ponds to the south of Bourne Brook 030-OT1-190002 and drain at Bourne Brook 030-OT1-190006) fall within the land required for the construction of the Proposed Scheme.
- 3.4.110 A further three drains (Black Slough Farm drain network 030-OT1-189003, drains/streams A in Ravenshaw Wood 030-OT2-188008 and drains/streams B in Ravenshaw Wood 030-OT2-188010) and seven ponds (ponds to the north of Wyrley and Essington Canal, Whittington 030-OT-183004 and 030-OT-183005, ponds to the east of Fulfen Wood 030-OT 184003 and 030-OT-184004, a pond north of the tributary of Mare Brook 030-OT1-185003, an unnamed drain becomes a tributary of Pyford Brook Catchment 030-OT2-188007 and Marina 030-OT 190009) are located outside the land required for the construction of the Proposed Scheme.
- 3.4.111 All nine watercourses as well as five drains and eight ponds have been surveyed for otter. Table 187 summarises any holts, potential holts and couches recorded.

Table 187: Summary of holts, potential holts and couches recorded during survey in CFA22

Ecology survey code	Watercourse or water body name	OS grid reference	Nature of record	Distance from Proposed Scheme (m) and orientation
030-OT2-189008	Unnamed watercourse (030-OT2-189001)	SK11611424	Potential holt under oak tree	immediately adjacent to north

- 3.4.112 Watercourses where surveys have confirmed the presence of otter through identification of field signs (such as spraints, sightings or footprints) are as follows:
- Trent and Mersey canal (030-OT2-188001) – over 30 otter spraints recorded (fresh and old) between SK1145514912 and SK1507514642 recorded between 28 August 2012 and 17 June 2013; and
 - Bourne Brook (030-OT2-190001) – one spraint recorded at SK1083314190 on 10 October 2012.

- 3.4.113 Otters are present on the Trent and Mersey Canal (030-OT2-188001) and Bourne Brook (030-OT2-190002).
- 3.4.114 Despite no evidence of otter on either the Mare Brook (030-OT2-184001) or Coventry Canal (030-OT2-183003) during the surveys, desk study records from 2006 indicate the presence of otter on the Mare Brook approximately 1.8km from the land required for the construction of the Proposed Scheme, and at the Coventry Canal comprising numerous records of otter sightings between 2001 and 2012.
- 3.4.115 The Curborough Brook was assessed as having habitat features (good foraging and commuting resource) suitable for otters. Based on the direct connectivity of Curborough Brook with the Trent and Mersey Canal it is considered that otters are likely to use at least the closest reaches of this watercourse as a foraging and refuge resource and thus their presence is assumed.
- 3.4.116 Similarly due to the connectivity between an unnamed tributary of the Mare Brook at Fradley Business Park (030-OT2-186001) and the Mare Brook (030-OT2-185001) where there are desk study records of otters, their presence is assumed.
- 3.4.117 No evidence of otter was observed on the unnamed tributary of the Fisherwick Brook (030-OT2-183001) despite some suitable habitat conditions being observed for commuting, refuge and foraging.
- 3.4.118 A further unnamed tributary watercourse of the Mare Brook (030-OT1-184001) was considered to offer very limited suitability for otter due to large reaches of this watercourse passing in culvert either side of the land required for the construction of the Proposed Scheme.
- 3.4.119 No evidence of otter was observed on the disused reach of the Wyrley and Essington Canal (030-OT2-183002). This water body is currently utilised as a marina and has aquatic connectivity with the Coventry Canal. This watercourse is considered sub optimal for otters and is thus unlikely to be utilised by otters other than for occasional foraging resource due to its relatively isolated nature and disturbed nature.
- 3.4.120 There was no evidence of otter on the network of unnamed drains within Ravenshaw Wood (030-OT2-188008, 030-OT2-188009, 030-OT2-188010, 030-OT2-189001) or within the pond associated with the tributary of the Mare Brook at Fradley Business Park 030-OT2-186002 and eastern pond at Fradley Business Park 030-OT2-186006. Otters are therefore considered to be currently absent from these water body features, despite offering some suitable habitat for this species.
- 3.4.121 Water bodies considered to have poor suitability for otter due to their isolated and in the most part dry nature and offering little connective habitat include two unnamed drains 030-OT1-191001, 030-OT1-192001 and pond features; the northern pond at Fradley Business Park 030-OT1-186005, Black Slough Farm drain network 030-OT1-189003 and ponds to the north of the Bourne Brook 030-OT1-190005.
- 3.4.122 Six water bodies (two ponds to the west of the unnamed watercourse at Fradley Business Park 030-OT-186007 and 030-OT-186008, an unnamed drain becomes a tributary of Pyford Brook Catchment 030-OT-189007, two ponds to the north of Wyrley and Essington Canal 030-OT-183004 and 030-OT-183005 and a pond to the east of Fulfen Wood 030-OT-184004) were not subject to survey. These water bodies

are unlikely to be utilised by otter other than occasional seasonal foraging resource due to their small size and not being stocked with fish.

- 3.4.123 Current trends indicate continued re-colonisation of watercourses by otter both nationally and in Staffordshire. Therefore, unless the watercourses are unsuitable, the presence of otter is assumed on the watercourses within this area.
- 3.4.124 Six terrestrial sites have been identified within this area, which have potential to offer breeding habitat for otter. These sites lie within the land required for construction of the Proposed Scheme and comprise Fradley Wood (030-OT2-188004), Big Lyntus Wood (030-OT-188005), Brokendown Wood (030-OT2-188006), Ravenshaw Wood (030-OT2-188011), Vicars Coppice (030-OT-190007) and St John's Gorse (030-OT-190010). Detailed assessments of three of these terrestrial habitat features with access have been undertaken and no confirmed breeding sites were identified.
- 3.4.125 Fradley Wood and Ravenshaw Wood were classed as having a high suitability for potential breeding habitat due to the presence of moderate cover and a good foraging resource in the nearby Trent and Mersey Canal, Coventry Canal and Curborough Brook.
- 3.4.126 Brokendown Wood was classed as being unsuitable for potential breeding habitat due to its lack of cover, despite the good foraging resource in the nearby Trent and Mersey Canal, Coventry Canal and Curborough Brook.
- 3.4.127 No evidence of current otter breeding sites was identified at any of the three sites.

4 Water vole

4.1 Introduction

- 4.1.1 This section of the appendix presents details of baseline information relating to water vole (*Arvicola amphibious*) for the section of the Proposed Scheme that will pass through CFA16 to CFA22 inclusive.

4.2 Methodology

- 4.2.1 Details of the standard methodology utilised for water vole surveys are provided in the Ecology technical note: Ecological field survey methods and standards (Volume 5: Appendix CT-001-000/2).
- 4.2.2 Desk study records relating to water vole were obtained from the following sources:
- Warwickshire Biological Records Centre (WBRC);
 - Warwickshire County Otter Recorder (anecdotal information relating to water voles);
 - Northamptonshire Biological Records Centre (NBRC);
 - Staffordshire Ecological Record (SER);
 - Warwickshire, Coventry and Solihull Biodiversity Action Plan (BAP); and
 - Staffordshire BAP.
- 4.2.3 Records from Biological Records Centres were available for up to 5km from the centreline of the route of the Proposed Scheme.
- 4.2.4 Table 188 gives a summary of all water surveys conducted within CFA16 to CFA22 and the survey reaches and results for water vole are shown on Volume 5: Map Books – Ecology, Maps EC-12. The results of surveys and a discussion are given in the baseline section for each area.

Table 188: Summary of water vole survey conducted in CFA16 to CFA22 inclusive

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁹⁴ (m) and orientation
030-WV2-118001	Oxford Canal (Summit Pound)	Canal	SP4551054780 to SP4438755363	Full (100%)	18 August 2012; and 23 April 2013	CFA16	Crossed by the route of the Proposed Scheme
030-WV2-123001	Unnamed tributary watercourse of the River Itchen	Ordinary watercourse	SP4141559983 to SP4195059665	Moderate (25-75%)	17 December 2012; and 26 April 2013	CFA16	Within land required
030-WV2-123002	Field pond near to tributary of the River Itchen	Pond	SP 42013 59839	Full (100%)	17 December 2012; and 26 April 2013	CFA16	Within land required
030-WV2-126001	River Itchen	Ordinary watercourse	SP4007061242 to SP4047561747	Moderate (25 – 75%)	27 June 2013	CFA16	Crossed by route of the Proposed Scheme
030-WV1-127001	Ornamental Pond within Dallas Burston Polo Grounds	Pond	SP3946862329 to SP3945462287	Full (100%)	24 April13	CFA16	Within land required
030-WV1-127002	Drain running through Long Itchington and Ufton Wood SSSI	Drain	SP3896462353 to SP3862063055	Full (100%)	12 June 2013	CFA16	Within land required
030-WV2-129002	Grand Union Canal (Braunston to Leamington Spa)	Canal	SP3780863858 to SP3882764127	Full (100%)	21 August 2012; and 24 April 2013	CFA17	Crossed by the route of the Proposed Scheme
030-WV1-131002	Unnamed tributary watercourse of the River Leam	Ordinary watercourse	SP3602366624 to SP3701865906	Majority (75-99%)	16 November 2012	CFA17	Crossed by the route of the Proposed Scheme
030-WV2-132002	River Leam (confluence with River Itchen to confluence of River Avon)	Main river	SP3553967349 to SP3608967682	Majority (75-99%)	18 September 2012; and 23 May 2013	CFA17	Crossed by the route of the Proposed Scheme.
030-WV2-136003	Unnamed tributary watercourse of River Avon at Furzon Hill Farm	Ordinary watercourse	SP3405070828 to SP3457869996	Moderate (25-75%)	25 September 2013 and 20 May 2013	CFA17 and CFA18	Within land required

¹⁹⁴ Hereafter the term 'land required' is used as a shortened version of the full term 'land required for the construction of the Proposed Scheme'.

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁹⁴ (m) and orientation
030-WV2-138001	River Avon (Claycoton Yelvertoft Brook to confluence of the River Sowe)	Main river	SP3242472376 to SP3329971557	Majority (75-99%)	15 August 2012; and 23 April 2013	CFA18	Adjacent to land required
030-WV1-138002	Unnamed tributary watercourse of the River Avon	Ordinary watercourse	SP3254070850 to SP3289270958	Little (<25%)	23 April 2013	CFA18	Within land required
030-WV2-139001	River Avon (confluence of the R. Sowe to confluence of the R. Leam)	Main river	SP3187372053 to SP3242672378	Majority (75-99%)	15 August 2012; and 23 April 2013	CFA18	Crossed by the route of the Proposed Scheme
030-WV2-139002	River Sowe	Main river	Small section surveyed under 030-OT-139001 SP3242672378 to SP3248272431	Full (100%)	15 August 2012; and 23 April 2013	CFA18	Adjacent to land required
030-WV1-139003	Unnamed tributary watercourse of the River Avon in west of unnamed woodland	Ordinary watercourse	SP3190272061 to SP3182872255	Full (100%)	15 August 2012	CFA18	Within land required
030-WV1-139004	Unnamed tributary watercourse of the River Avon in east of unnamed woodland	Ordinary watercourse	SP3169171934 to SP3155072054	Little (<25%)	15 August 2012	CFA18	Within land required
030-WV2-141001	Finham Brook (conf Canley Brook to conf River Sowe)	Main river	SP3087173079 to SP3129373562	Moderate (25-75%)	19 September 2012; and 10 April 2013	CFA18	Crossed by the route of the Proposed Scheme
030-WV2-141002	Canley Brook (source to conf with Finham Brook)	Main river	SP3014673556 to SP2992774688	Majority (75-99%)	29 August 2012 And 10 April 2013	CFA18	Crossed by the route of the Proposed Scheme
030-WV1-141003	Pond to south of Dalehouse Farm	Pond	SP3095473275	Full (100%)	10 April 2013	CFA18	Within land required
030-WV2-141004	Three ponds to north of Dalehouse Farm	Pond	SP3075373427	Full (100%)	10 April 2013; and 20 June 2013	CFA18	Within land required
030-WV2-141005	Pond to north of Dalehouse Farm	Pond	SP3072073585	Full (100%)	10 April 2013 and 20 June 2013	CFA18	Within land required

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁹⁴ (m) and orientation
030-WV2-141006	Pond to south of Milburn Grange	Pond	SP3061173451	Full (100%)	10 April 2013 and 20 June 2013	CFA18	30m south-west
030-WV1-141007	Pond to east of Dalehouse Farm	Pond	SP3090373353	Full (100%)	10 April 2013	CFA18	Within land required
030-WV1-142001	Unnamed tributary watercourse of the Canley Brook	Ordinary watercourse	SP2886074324 to SP2979174449	Moderate (25-75%)	12 December 2012 and 10 April 2013	CFA18	Crossed by the route of the Proposed Scheme
030-WV2-144004	Pond at South Hurst Farm	Pond	SP2833675120	Full (100%)	1 May 2013; and 19 June 2013	CFA18	5m south-west
030-WV2-145001	Unnamed tributary watercourse of the Canley Brook	Ordinary watercourse	SP2784575122 to SP2873875164	Majority (75-99%)	1 May 2013; and 19 June 2013	CFA18	Crossed by the route of the Proposed Scheme
030-WV1-145004	Pond near Brockendon Garage Farm	Pond	SP27507560	Full (100%)	1 March 2013	CFA18	50m north-east
030-WV1-145005	Southern pond in Broadwells Wood	Pond	SP2806775356	Full (100%)	1 March 2013	CFA18	150m north-east
030-WV1-145006	Northern pond in Broadwells Wood	Pond	SP27907550	Full (100%)	1 March 2013	CFA18	120m north-east
030-WV2-146001	Unnamed Drain (Draining to the Canley Brook)	Drain	SP2814475162 to SP2697775642	Majority (75-99%)	30 April 2013 and 18 June 2013	CFA18	Crossed by the route of the Proposed Scheme
030-WV1-160001	Unnamed tributary watercourse of the River Cole near Chelmsley Wood	Main river	SP1960686924 to SP1902687876	Majority (75-99%)	24 April 2013	CFA19	Crossed by the route of the Proposed Scheme
030-WV2-160002	River Cole (Hatchford-Kingshurst Brook to River Blythe)	Main river	SP1885487677 to SP1926089529	Majority (75-99%)	17 September 2012 and 24 April 2013	CFA19	Crossed by the route of the Proposed Scheme
030-WV1-161001	Unnamed tributary watercourse of the River Cole Coleshill Hall Farm	Ordinary watercourse	SP1899288229 to SP1962387708	Full (100%)	23 April 2013	CFA19	Crossed by the route of the Proposed Scheme
030-WV2-161003	Unnamed Drain – M6 drainage (Drains to the River Cole)	Drain	SP1905689286 to SP1929288606	Full (100%)	25 April 2013	CFA19	Immediately adjacent to land required to the east

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁹⁴ (m) and orientation
030-WV1-161004	Unnamed tributary watercourse of the River Cole at the Catmore	Ordinary watercourse	SP1861188913 to SP1849188906	Full (100%)	24 April 2013	CFA19	139m west
030-WV2-162001	Unnamed tributary watercourse of the River Cole at Grimstock	Ordinary watercourse	SP1942189771 to SP1928189738	Full (100%)	17 September 2012 and 5 March 2013	CFA19	Immediately adjacent to land required to the east
030-WV1-162002	Unnamed tributary watercourse of the River Cole at The Belt	Ordinary watercourse	SP1928189738 to SP1831089654	Full (100%)	25 April 2013	CFA19	Crossed by the route of the Proposed Scheme
030-WV1-162007	Unnamed pond in The Belt	Pond	SP 1866089743	Full (100%)	25 April 2013	CFA19	50m east
030-WV1-163001	Unnamed tributary watercourse of the River Tame	Ordinary watercourse	SP1941091401 to SP1821690334	Full (100%)	24 April 2013	CFA19	Crossed by the route of the Proposed Scheme
030-WV1-163002	Pond	Pond	SP1881690549	Full (100%)	24 April 2013	CFA19	Within land required
030-WV1-163003	Large pond to south of unnamed tributary of the River Tame, Water Orton	Pond	SP1832090453	Full (100%)	24 April 2013	CFA19	Crossed by the route of the Proposed Scheme
030-WV1-163004	Pond to north of unnamed tributary of the River Tame, Water Orton	Pond	SP1818190588	Full (100%)	24 April 2013	CFA19	Within land required
030-WV1-163005	Small pond to south of unnamed tributary of the River Tame, Water Orton	Pond	SP1847190564	Full (100%)	24 April 2013	CFA19	Crossed by the route of the Proposed Scheme
030-WV1-163006	Drain into unnamed tributary watercourse of the River Tame	Drain	SP1845090569 to SP1842690638	Full (100%)	24 April 2013	CFA19	Crossed by the route of the Proposed Scheme
030-WV2-164001	Flooded lagoon within Coleshill Sewage Works Grassland LWS	Lagoon	SP1938491391 to SP1883291607	Full (100%)	11 October 2012 and 24 April 2013	CFA19	Within land required

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁹⁴ (m) and orientation
030-WV2-164002	River Tame (from Conf of the two arms to R Blythe)	Main river	SP1941091401 to SP1834091719	Majority (75-99%)	11 October 2012 and 24 April 2013	CFA19 and CFA20	Crossed by the route of the Proposed Scheme
030-WV1-164003	Unnamed tributary watercourse of the Tame south	Ordinary watercourse	SP1944791629 to SP1822791985	Majority (75-99%)	11 October 2012	CFA20	Crossed by the route of the Proposed Scheme
030-WV1-164004	Unnamed tributary watercourse of the Tame north	Ordinary watercourse	SP1945491662 to SP1901391898	Majority (75-99%)	11 October 2012	CFA20	Crossed by the route of the Proposed Scheme
030-WV1-165001	Unnamed drain (drains to River Tame)	Drain	SP1901391898 to SP1928792143	Majority (75-99%)	11 October 2012	CFA20	Crossed by the route of the Proposed Scheme
030-WV2-167001	Birmingham and Fazeley Canal (upper section)	Canal	SP1903594301 to SP1945295139	Full (100%)	20 August 2012 and 24 April 2013	CFA20	Crossed by the route of the Proposed Scheme
030-WV2-167002	Southern pond adjacent to the Birmingham and Fazeley Canal	Pond	SP 1918 9485	Full (100%)	20 August 2012 and 9 April 2013	CFA20	Crossed by the route of the Proposed Scheme
030-WV2-167003	Northern pond adjacent to the Birmingham and Fazeley canal	Pond	SP 1918 9485	Full (100%)	20 August 2012 and 9 April 2013	CFA20	Crossed by the route of the Proposed Scheme
030-WV2-168001	Unnamed Drain (Drains to Middleton Hall Catchment (tributary of Langley Brook))	Drain	SP1926194778 to SP1924595278	Full (100%)	9 April 2013	CFA20	Within land required
030-WV2-168002	Unnamed Stream (Tributary of Middleton Hall Catch (tributary of Langley Brook))	Ordinary watercourse	SP1908995175 to SP1940395496	Full (100%)	9 April 2013	CFA20	Crossed by the route of the Proposed Scheme
030-WV1-168004	Cuttle Mill Fisheries Central Pond	Pond	SP1903095017	Full (100%)	12 September 2012	CFA20	Adjacent to land required
030-WV1-168005	Cuttle Mill Fisheries Northern Pond	Pond	SP1908794990	Full (100%)	12 September 2012	CFA20	Adjacent to land required

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁹⁴ (m) and orientation
030-WV1-168006	Cuttle Mill Fisheries Southern Pond	Pond	SP1897995117	Full (100%)	12 September 2012	CFA20	Adjacent to land required
030-WV2-170002	Three ponds adjacent to Coneybury Wood	Pond	SP 18976 97447	Full (100%)	12 June 2013	CFA20	Immediately adjacent to land required to the east
030-WV1-170005	Middleton Hall Farm Quarry Pool	Pond	SP 18943 97171	Moderate (25-75%)	19 September 2012	CFA20	Crossed by the route of the Proposed Scheme
030-WV2-171001	Langley Brook (from Source to Middleton Hall Catch)	Ordinary watercourse	SP1902098243 to SP1820198028	Moderate (25-75%)	26 April 2013 and 12 June 2013	CFA20	Crossed by the route of the Proposed Scheme
030-WV2-171002	Large pond alongside Langley brook	Pond	SP1865598207	Full (100%)	26 April 2013 and 12 June 2013	CFA20	Immediately adjacent to land required to the east
030-WV2-172002	Gallows brook	Ordinary watercourse	SP1848298960 to SP1768799183	Majority (75-99%)	16 August 2012 and 16 May 2013	CFA20 and CFA21	Crossed by the route of the Proposed Scheme
030-WV2-172003	Small reservoir/fishing lake at Brook Farm, Middleton	Pond	SP1832499393	Full (100%)	16 August 2012 and 16 May 2013	CFA20	150m north-east
030-WV2-172004	Ponds north of Gallows Brook at Brook Farm, Middleton	Pond	SP17786 99199	Full (100%)	16 May 2013	CFA20	Within land required
030-WV1-172006	Pond close to Gallows Brook at Brook Farm, Middleton	Pond	SP18436 99056	Full (100%)	16 May 2013	CFA20	70m west
030-WV1-172007	Marl Pit at Brook Farm Middleton	Pond	SP1786999347	Full (100%)	16 May 2013	CFA20	Within land required
030-WV1-172008	Small pond at Brook Farm, Middleton	Pond	SP 17866 99321	Full (100%)	16 May 2013	CFA20	Immediately adjacent to land required to the east

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁹⁴ (m) and orientation
030-WV2-173001	Unnamed tributary watercourse of the River Tame at Brook Farm (Langley Brook from Middleton Hall Catch to R Tame)	Ordinary watercourse	SP1792799453 to SP1722099574	Majority (75-99%)	16 August 2012 and 16 May 2013	CFA21	Crossed by the route of the Proposed Scheme
030-WV1-173002	Unnamed tributary watercourse of the River Tame at Shirral Hall Farm (tributary of Langley Brook downstream of confluence)	Ordinary watercourse	SP1766999619 to SK1664400140	Little (<25%)	23 April 2013	CFA21	Crossed by route of Proposed Scheme
030-WV1-174002	Unnamed drain at Woodside Farm (becomes a tributary of the Black-Bourne Brook from source (confluence) to River Tame)	Ordinary watercourse	SK1671301457 to SK1629801323	Moderate (25 – 75%)	25 April 2013	CFA21	Within land required
030-WV1-175001	Unnamed tributary watercourse of the Black-Bourne Brook at Holt Farm (from source (confluence) to R Tame)	Ordinary watercourse	SK1624802079 to SK1583001367	Moderate (25-75%)	25 April 2013	CFA21	Crossed by the route of the Proposed Scheme
030-WV1-175002	Unnamed Stream (tributary of Black-Bourne Brook from source (confluence) to R Tame)	Ordinary watercourse	SK1602001789 to SK1534502073	Majority (75-99%)	25 April 2013	CFA21	Crossed by the route of the Proposed Scheme
030-WV2-176002	Pond to south of Snakes Hill, Hints	Pond	SK 1553 0282	Full (100%)	21 August 2012 and 25 April 2013	CFA21	Immediately adjacent to land required to the east
030-WV2-176004	Pond to north-east of Brock Hurst Farm	Pond	SK1573401886	Full (100%)	11 June 2013	CFA21	Immediately adjacent to land required to the west
030-WV2-177001	Black-Bourne Brook from source (confluence) to River Tame	Main river	SK1459303474 to SK1567302741	Majority (75-99%)	13 September 2012 and 25 April 2013	CFA21	Crossed by the route of the Proposed Scheme
030-WV2-177002	Pond to south of Black-Bourne Brook	Pond	SK1474703492	Full (100%)	13 September 2012 and 25 April 2013	CFA21	10m west
030-WV1-177003	Pond to north of Black-Bourne Brook	Pond	SK1478403684	Full (100%)	13 September 2012	CFA21	Immediately adjacent to land required to the west

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁹⁴ (m) and orientation
030-WV1-177005	Unnamed drain to immediate east of Black-Bourne Brook	Drain	SK1535303015 to SK1515503387	Full (100%)	11 March 2013	CFA21	Within land required
030-WV2-177007	Unnamed drain at Bourne House, Weeford	Drain	SK1477003538 to SK1472303521	Full (100%)	25 April 2013	CFA21	50m south-west
030-WV2-177008	Pond in Snakes Hill Wood, Hints	Pond	SK1559002885	Full (100%)	13 September 2012 and 25 April 2013	CFA21	Adjacent to land required to the west
030-WV2-177009	Drain associated with the Black-Bourne Brook	Drain	SK1552402867 to SK1550402840	Full (100%)	13 September 2012 and 25 April 2013	CFA21	Immediately adjacent to land required to the west
030-WV1-179001	Stream and associated large pond associated with Moor Covert	Ordinary watercourse and pond	SK1428605732 to SK1459305353	Majority (75-99%)	27 September 2012	CFA21	Adjacent to land required
030-WV2-183001	Unnamed tributary watercourse of Fisherwick Brook	Ordinary watercourse	SK1498309246 to SK1434108892	Moderate (25-75%)	25 April 2013 and 11 June 2013	CFA22	Crossed by the route of the Proposed Scheme
030-WV1-183002	Wyrley and Essington Canal (disused)	Canal	SK1499909347 to SK1450309049	Majority (75-99%)	17 June 13	CFA22	Crossed by the route of the Proposed Scheme
030-WV2-183003	Coventry and Ashby Canals (Coventry Canal)	Canal	SK1516909537 to SK14772311091	Full (100%)	19 September 2012 and 25 April 2013	CFA22	Immediately adjacent to land required to east
030-WV1-184001	Unnamed tributary watercourse of Mare Brook	Main river	SK1521510886 to SK1404009635	Little (<25%)	23 April 2013	CFA22	Crossed by the route of the Proposed Scheme
030-WV1-185001	Mare brook	Ordinary watercourse	SK1521510886 to SK1383511231	Moderate (25-75%)	26 June 2013	CFA22	Crossed by the route of the Proposed Scheme
030-WV1-185003	Pond north of tributary of Mare Brook	Pond	SK1454911349	Full (100%)	12 August 2012	CFA22	120m east
030-WV2-186001	Unnamed tributary watercourse of Mare Brook at Fradley Business Park	Ordinary watercourse	SK1394512551 to SK1442211605	Majority (75-99%)	12 September 2012 and 14 May 2013	CFA22	Crossed by the route of the Proposed Scheme

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁹⁴ (m) and orientation
030-WV2-186002	Pond associated with the tributary of Mare brook at Fradley Business Park	Pond	SK 14242 11784	Full (100%)	11 September 2012 and 14 May 2013	CFA22	Within land required
030-WV1-186005	Northern pond at Fradley Business Park	Pond	SK1429011885	Full (100%)	11 September 2012	CFA22	Within land required
030-WV2-186006	Eastern pond at Fradley Business Park	Pond	SK1438711813	Little (<25%)	11 September 2012	CFA22	Immediately adjacent to the land required to the east
030-WV2-188001	Trent and Mersey Canal (summit to Alrewas)	Canal	SK1361113726 to SK1243313851	Full (100%)	28 August 2012 and 25 April 2013	CFA22	Crossed by the route of the Proposed Scheme
030-WV1-188002	Curborough Brook (Pyford Brook Catchment (tributary of Trent))	Main river	SK1304413877 to SK1286812985	Majority (75-99%)	23 April 2013	CFA22	Crossed by the route of the Proposed Scheme
030-WV1-188003	Pond to south of Trent and Mersey Canal	Pond	SK13075 13208	Full (100%)	28 September 2012	CFA22	Immediately adjacent to the land required to the south
030-WV1-188007	Pond to west of Curborough Brook	Pond	SK1299013425	Full (100%)	30 April 2013	CFA22	Immediately adjacent to land required
030-WV1-188008	Drain/stream A in Ravenshaw wood	Drain	SK1233213482 to SK1248713477	Full (100%)	20 August 2012	CFA22	Immediately adjacent to land required Scheme to the west
030-WV1-188009	Drain/stream B in Ravenshaw wood	Drain	SK1253413637 to SK1230913726	Full 100%	20 August 2012	CFA22	Within land required
030-WV1-188010	Drain/stream C in Ravenshaw wood	Drain	SK1230913726 to SK1233213482	Full (100%)	20 August 2012	CFA22	Immediately adjacent to land required to the west
030-WV1-189001	Drain/stream D in Ravenshaw wood	Drain	SK1235313807 to SK1161414560	Full (100%)	26 April 2013	CFA22	Immediately adjacent to land required to the east
030-WV1-189003	Black Slough Farm drain network	Drain	SK1162614307 to SK1166514618	Full (100%)	28 August 2012	CFA22	Immediately adjacent to land required to the east
030-WV2-190001	Bourne Brook (Bourne-Bilson Brook Catchment (tributary of River Trent))	Ordinary watercourse	SK1045613753 to SK1112514634	Moderate (25-75%)	4 September 2012 and 26 June 2013	CFA22	Crossed by the route of the Proposed Scheme

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	Level of access within required survey extent	Survey dates	CFA	Distance from the land required for construction of the Proposed Scheme ¹⁹⁴ (m) and orientation
030-WV1-190002	Pond to south of Bourne Brook	Ponds	SK1089913990	Full (100%)	26 June 2013	CFA22	Within land required
030-WV2-190004	Ponds associated with Bourne Brook	Ponds	SK1080314392	Full (100%)	26 March and 26 June 2013	CFA22	Within land required
030-WV1-190005	Pond to north of Bourne Brook	Ponds	SK1077714172	Full (100%)	26 March 2013	CFA22	Within land required
030-WV1-190006	Drain at Bourne Brook	Drain	SK1064213936	Full (100%)	26 March 2013	CFA22	Within land required
030-WV-191001	Unnamed Drain A (Becomes a tributary of Trent)	Ordinary watercourse	SK0999314514 to SK0972215624	Little (<25%)	10 June 2013	CFA22	Crossed by the route of the Proposed Scheme
030-WV-192001	Unnamed Drain B (Becomes a tributary of Trent)	Ordinary watercourse	SK0923715131 to SK0971415298	Full (100%)	10 June 2013	CFA22	Crossed by the route of the Proposed Scheme

4.2.5 Those watercourses and water bodies that were scoped out from further assessment for water vole with associated rationale are presented in Table 189.

Table 189: Rationale for scoping out requirement for further survey of watercourses/water bodies in CFA16 to CFA22 inclusive

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	North of Wormleighton	SP 46135 53576	Too small and isolated ¹⁹⁵	CFA16
Water body	North of Wormleighton	SP 45992 53588	Too small and isolated	CFA16
Water body	North of Wormleighton	SP 45155 54348	Too small and isolated	CFA16
Water body	North of Wormleighton	SP 44695 55970	Dry ditch	CFA16
Water body	North-east of Ladbroke Fox Covert	SP 43679 57558	Too small and isolated	CFA16
Water body	North of Ladbroke Fox Covert	SP 43409 58230	Too isolated	CFA16
Water body	Lady Hill	SP 42789 58897	Too isolated	CFA16
Water body	Windmill Hill	SP 42524 58973	Too isolated	CFA16
Water body	East of Windmill Hill	SP 42859 58643	Too isolated	CFA16
Water body	Windmill Hill	SP 42425 58948	Too isolated	CFA16
Water body	East of A423 Banbury Road	SP 42339 59627	Too isolated	CFA16
Water body	East of A423 Banbury Road	SP 42369 59799	Surveyed as continuation of watercourse	CFA16
Water body	East of A423 Banbury Road	SP 42541 59614	Too isolated	CFA16
Water body	East of A423 Banbury Road	SP 42242 60008	Field drain isolated by road	CFA16
Water body	East of A423 Banbury Road	SP 41788 60041	Managed ornamental pond and isolated	CFA16
Water body	East of A423 Banbury Road	SP 41963 60001	Too isolated	CFA16
Water body	South-west of Southam	SP 41721 60303	Too isolated	CFA16
Water body	South-west of Southam	SP 41795 60262	Too isolated	CFA16
Water body	South of Southam	SP 41009 60866	Too isolated	CFA16
Water body	South-east of Southam	SP 41220 60687	Dry ditch	CFA16
Water body	South-east of Southam	SP 40875 60528	Too isolated	CFA16
Water body	North of A425 Southam Road	SP 40433 61505	Too isolated	CFA16
Water body	North of A425 Southam Road	SP 40401 61515	Too small	CFA16
Water body	Bascote Heath	SP 39205 62397	Field drain	CFA16
Water body	Bascote Heath	SP 38980 61985	Too isolated	CFA16
Water body	East of Ufton Wood	SP 39281 61888	Very shallow field drain	CFA16

¹⁹⁵ Considered likely to be inaccessible from further suitable watercourse or water body features by a significant distance and/or where barriers may exist to species movement and therefore unlikely to be colonised by water vole.

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	East Longhole Bridge	SP 38788 63175	Field drain	CFA16
Water body	North-west of Ufton Wood	SP 38502 63259	Field drain	CFA16
Water body	North-west of Ufton Wood	SP 38547 63117	Field drain	CFA16
Water body	North-east of Longhole Bridge	SP 39037 63358	Field drain	CFA16
Water body	North-east of Longhole Bridge	SP 38778 63734	Too isolated	CFA16
Water body	North-east of Longhole Bridge	SP 38708 63750	Too isolated	CFA16
Water body	North of Grand Union Canal, south of Print Wood	SP 37924 63931	Drain alongside Grand Union Canal – surveyed as part of this	CFA17
Water body	North of Grand Union Canal, south of Print Wood	SP 38135 63962	Drain alongside Grand Union Canal – surveyed as part of this	CFA17
Water body	South of Print Wood	SP 37839 64812	Too far from nearest watercourse	CFA17
Water body	Sutton Spinney	SP 37376 65220	Too far from nearest watercourse	CFA17
Water body	Sutton Spinney	SP 37064 65910	Likely to be ephemeral pools with low suitability due to location on disused rail line	CFA17
Water body	Sutton Spinney	SP 37111 65940	Likely to be ephemeral pools with low suitability due to drying and location on disused rail line i.e. disturbance by members of public)	CFA17
Water body	Sutton Spinney	SP 37459 65449	Too small and isolated	CFA17
Water body	East of River Leam	SP 36586 66987	Too isolated	CFA17
Water body	North of Offchurch	SP 36406 66237	Too small and isolated	CFA17
Water body	East of South Cubbington Wood	SP 35721 67960	Too isolated	CFA17
Water body	North-east of South Cubbington Wood	SP 35669 68533	Too isolated	CFA17
Water body	East of Cubbington, west of South Cubbington Wood	SP 35105 68380	Too isolated	CFA17
Water body	South-west of Cubbington	SP 35232 67411	Too small and isolated	CFA17
Water body	South-west of Cubbington	SP 35189 67503	Too small and isolated	CFA17
Water body	South Cubbington wood	SP 35162 68939	Too small and isolated	CFA17
Water body	North of Cubbington	SP 34321 69983	Too isolated	CFA17
Water body	North of Cubbington	SP 33966 69955	Too isolated	CFA18
Water body	South-east of Stoneleigh Park	SP 33560 70402	Too isolated	CFA18
Water body	North of Heathfield	SP 34021 70388	Too small	CFA18
Water body	North of Heathfield	SP 34026 70402	Too small	CFA18
Water body	North of Heathfield	SP 33074 70941	Too isolated	CFA18

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	South-east of Stoneleigh Park	SP 32695 70746	Too isolated	CFA18
Water body	Stoneleigh Park	SP 32752 71460	High levels of disturbance	CFA18
Water body	Stoneleigh Park	SP 32468 72035	Too isolated	CFA18
Water body	North-east of Stoneleigh park	SP 32642 71927	Tank.	CFA18
Water body	North of Stoneleigh Park	SP 32518 71806	Too small and isolated	CFA18
Water body	North of Stoneleigh Park	SP 32036 73021	Too isolated	CFA18
Water body	North of Stoneleigh Park	SP 31740 72810	Too isolated	CFA18
Water body	North-west of A46 Kenilworth Bypass	SP 31599 72990	Too isolated	CFA18
Water body	East of A46 Kenilworth Bypass/West of Kings Wood	SP 31977 73045	Too isolated	CFA18
Water body	West of Kenilworth	SP 31777 72296	Too isolated	CFA18
Water body	North-east of Kenilworth Golf Club	SP 31289 72962	Not present	CFA18
Water body	West of Kings Wood	SP 31672 73061	Too isolated	CFA18
Water body	Kenilworth Golf Club	SP 31410 72631	Too isolated	CFA18
Water body	South-east of A429 Kenilworth Road	SP 30717 73583	Too isolated	CFA18
Water body	South-east of A429 Kenilworth Road	SP 31153 72979	Too isolated	CFA18
Water body	South of Westerly Bridge	SP 31293 73258	Too isolated	CFA18
Water body	South-east of A429 Kenilworth Road	SP 30924 73814	Too isolated	CFA18
Water body	North of Kenilworth	SP 30385 73815	Too isolated	CFA18
Water body	North of Kenilworth	SP 30408 73889	Too isolated	CFA18
Water body	North of Milburn Grange	SP 30696 73923	Too isolated	CFA18
Water body	North-west of A429 Kenilworth Road	SP 29793 73839	Surveyed as continuation of Finham Brook	CFA18
Water body	East of Crackley wood	SP 29312 74139	Sub-optimal habitat	CFA18
Water body	South-east of Broadwells Wood	SP 28415 74834	Too isolated	CFA18
Water body	East of Broadwells wood	SP 28370 74895	Too isolated	CFA18
Water body	North of Red Lane	SP 27817 74822	Too isolated	CFA18
Water body	North of Blind Lane	SP 28367 74614	Too isolated	CFA18
Water body	South-west of Roughknowles Wood	SP 28316 74998	Too isolated	CFA18
Water body	South-west of Broadwells Wood	SP 27747 75465	Too isolated	CFA18
Water body	West of Burton Green	SP 27348 75324	Not present following initial survey	CFA18
Water body	Burton Green	SP 27089 75682	Too small and isolated	CFA18

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	Between Red Lane and the dismantled railway	SP 27276 75302	Too small and isolated	CFA18
Water body	East of Burton Green	SP 27604 75338	Dry	CFA18
Water body	West of Broadswell Wood	SP 27782 75323	Dry	CFA18
Water body	South-east of Black Waste wood	SP 27718 75536	Dry	CFA18
Water body	North-east of Water Orton	SP 26725 75883	Too isolated	CFA18
Water body	North-east of Water Orton	SP 26371 76122	Too isolated	CFA18
Water body	North-east of Water Orton	SP 27010 75898	Too isolated	CFA18
Water body	North-east of Water Orton	SP 26607 75689	Too isolated	CFA18
Water body	North-east of Water Orton	SP 26914 75806	Too small and isolated	CFA18
Water body	North-east of Water Orton	SP 26988 76004	Too small and isolated	CFA18
Water body	North-east of Water Orton	SP 26753 76157	Too small and isolated	CFA18
Water body	North-east of Water Orton	SP 26850 75974	Too small and isolated	CFA18
Water body	North-east of Water Orton	SP 26853 75980	Too small and isolated	CFA18
Water body	North-east of Water Orton	SP 26958 75912	Too small and isolated	CFA18
Water body	North-east of Water Orton	SP 26626 75984	Too isolated	CFA18
Water body	North-east of Water Orton	SP 26629 76528	Too isolated	CFA18
Water body	North-east of Water Orton	SP 26245 76277	Too isolated	CFA18
Water body	North-east of Water Orton	SP 25983 76369	Too isolated	CFA18
Water body	North-east of Water Orton	SP 25730 76776	Too isolated	CFA18
Water body	North-east of Water Orton	SP 25903 76868	Too small and isolated	CFA18
Water body	North-east of Water Orton	SP 25784 76859	Isolated field drain	CFA18
Water body	North-east of Water Orton	SP 25842 76645	Too small and isolated	CFA18
Water body	North-east of Water Orton	SP 25889 76500	Small, isolated field drain	CFA18
Water body	North-east of Water Orton	SP 25940 76884	Too small and isolated	CFA18
Water body	South-east of Black Waste wood	SP 18857 87396	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 19139 88226	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 19130 88420	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18875 88172	Too small and isolated	CFA19
Water body	South-east of Black Waste wood	SP 19236 88321	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18747 88255	Over 100m from Proposed Scheme	CFA19
Water body	South-east of Black Waste wood	SP 19037 89781	Too isolated	CFA19

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	South-east of Black Waste wood	SP 19380 89168	Over 100m from Proposed Scheme	CFA19
Water body	South-east of Black Waste wood	SP 19080 89897	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 19082 89905	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18851 90270	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18827 90310	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18923 90292	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18822 90546	No suitable burrowing opportunities due to bank profile	CFA19
Water body	South-east of Black Waste wood	SP 18860 90246	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18869 90256	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 18777 90178	Too isolated	CFA19
Water body	South-east of Black Waste wood	SP 19279 90621	Not present following initial survey	CFA19
Water body	South-east of Black Waste wood	SP 19429 91241	Unsuitable habitat-part of Coleshill STW	CFA19
Water body	South-east of Black Waste wood	SP 19584 91447	Unsuitable sewage treatment beds	CFA19
Water body	South-east of Black Waste wood	SP 19493 91205	Unsuitable sewage treatment beds	CFA19
Water body	South-east of Black Waste wood	SP 19442 91253	Unsuitable sewage treatment beds	CFA19
Water body	South-east of Black Waste wood	SP 19284 91295	Unsuitable sewage treatment beds	CFA19
Water body	South of M42	SP 18395 89766	Too small and isolated	CFA19
Water body	South of M42	SP 18660 89744	Too small and isolated	CFA19
Water body	South of M42	SP 18326 89657	Too small and isolated	CFA19
Water body	The belt, south of M42	SP 18311 89650	Too small and isolated	CFA19
Water body	South of Water Orton	SP 18250 90186	No suitable burrowing opportunities	CFA19
Water body	North of M42	SP 18249 90203	No suitable burrowing opportunities	CFA19
Water body	South of Water Orton	SP 18068 90189	No suitable burrowing opportunities	CFA19
Water body	North-east smiths wood	SP 17625 89899	Too isolated	CFA19
Water body	West of M6 toll and south of M42	SP 18233 89474	Too isolated	CFA19
Water body	West of M6 toll and south of M42	SP 18425 89699	Not present	CFA19
Water body	West of M6 toll and South of M42	SP 18197 89469	Not present	CFA19
Water body	West of M6 toll and South of M42	SP 18281 89731	Too isolated	CFA19
Water body	West of M6 toll and South of M42	SP 18322 89714	Too isolated	CFA19

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	West of M6 toll and South of M42	SP 18208 89663	Too isolated	CFA19
Water body	South of Water Orton	SP 17749 90461	Too small and isolated	CFA19
Water body	South of Water Orton	SP 17885 90352	Too small and isolated	CFA19
Water body	South-west of Water Orton	SP 17517 90621	Too small and isolated	CFA19
Water body	South-west of Water Orton	SP 17424 90424	Too isolated	CFA19
Water body	South-west of Water Orton	SP 17294 90673	Too isolated	CFA19
Water body	South-west of Water Orton	SP 17435 90708	Too isolated	CFA19
Water body	South of Water Orton	SP 17946 90483	Too isolated	CFA19
Water body	South of Water Orton	SP 18319 90460	Too isolated	CFA19
Water body	South of Water Orton	SP 18443 90604	Too isolated	CFA19
Water body	South of Water Orton	SP 18034 90509	Too isolated	CFA19
Water body	South of Water Orton	SP 18180 90585	Too isolated	CFA19
Water body	South of Water Orton	SP 18473 90561	Too isolated	CFA19
Water body	Water Orton	SP 18657 90650	Too small and isolated	CFA19
Water body	Water Orton	SP 18665 90656	Too small and isolated	CFA19
Water body	South of Water Orton	SP 18265 90643	Too isolated	CFA19
Water body	North-west of M42, south of Vicarage Lane, Water Orton	SP 18299 90349	Isolated field drain	CFA19
Water body	North-west of M42, south of Vicarage Lane, Water Orton	SP 18478 90196	Isolated field drain	CFA19
Water body	South of Water Orton	SP 18550 90337	Isolated field drain	CFA19
Water body	South-east of Black Waste wood	SP 19197 91710	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19186 91514	Unsuitable habitat-part of Coleshill STW	CFA20
Water body	South-east of Black Waste wood	SP 18967 92401	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19084 92455	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19617 92574	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19254 92000	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19568 92407	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19024 93576	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19696 93352	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19656 92990	Isolated field ditch/drain	CFA20
Water body	South-east of Black Waste wood	SP 20090 92993	Isolated field ditch/drain	CFA20

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	South-east of Black Waste wood	SP 19634 93357	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19607 93162	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19357 93957	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19129 94423	Too small	CFA20
Water body	South-east of Black Waste wood	SP 19135 94421	Too small	CFA20
Water body	South-east of Black Waste wood	SP 19451 93933	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19126 94411	Too small	CFA20
Water body	South-east of Black Waste wood	SP 19451 94121	Too isolated	CFA20
Water body	South-east of Black Waste wood	SP 19488 94257	Too isolated	CFA20
Water body	West of The Belfry, north of M42 J9	SP 19091 94993	Too isolated	CFA20
Water body	West of The Belfry, north of M42 J9	SP 19007 95072	Too isolated	CFA20
Water body	West of The Belfry, north of M42 J9	SP 19069 95124	Too small	CFA20
Water body	West of North Wood	SP 18983 95495	Too isolated	CFA20
Water body	West of North Wood	SP 19055 95642	Too isolated	CFA20
Water body	North of Marston Field Bridge	SP 19688 95122	Too isolated	CFA20
Water body	West of Bodymoor Heath	SP 20102 95797	Too small	CFA20
Water body	West of The Belfry, north of M42 J9	SP 18933 95053	Not present	CFA20
Water body	West of The Belfry, north of M42 J9	SP 18948 95003	Not present	CFA20
Water body	North of North Wood	SP 18854 96698	Too isolated	CFA20
Water body	South-east of Middleton, west of A4091 Tamworth Road	SP 18542 97523	Too isolated	CFA20
Water body	South of Coneybury Wood	SP 18906 97638	Too isolated	CFA20
Water body	North-east of Coneybury Wood	SP 18918 97677	Too isolated	CFA20
Water body	Middleton Park	SP 18861 97829	Too isolated	CFA20
Water body	Middleton Park	SP 18658 98072	Too isolated	CFA20
Water body	Middleton	SP 18231 98145	over 100m from Proposed Scheme	CFA20
Water body	South-east of Middleton	SP 18043 97893	over 100m from Proposed Scheme	CFA20
Water body	East of Oakleigh	SK 17408 00129	Too isolated	CFA21
Water body	East of Oakleigh	SK 17402 00113	Too isolated	CFA21
Water body	South-east of Loddy Wood	SP 16710 99723	Too isolated	CFA21
Water body	North-east of Bangley Wood	SK 16967 00388	Too isolated	CFA21
Water body	North of Bangley Wood	SK 16850 00707	Too isolated	CFA21

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	South-west of Oakleigh	SK 17072 00578	Isolated field drain	CFA21
Water body	South of Oakleigh	SK 16346 00894	Isolated field drain	CFA21
Water body	South of Oakleigh	SK 16435 00947	Isolated field drain	CFA21
Water body	South of Oakleigh	SK 16812 00516	Too small and isolated	CFA21
Water body	North of Drayton Lane, west of Drayton Bassett	SK 16774 00489	Too small and isolated	CFA21
Water body	East of Brockhurst	SK 16781 00503	Lined garden pond	CFA21
Water body	South-east of Brockhurst	SK 16039 01347	Too isolated	CFA21
Water body	West of Oakleigh	SK 16390 01598	Too isolated	CFA21
Water body	East of Roundhill Wood	SK 15964 01942	Field drain not present following initial surveys	CFA21
Water body	North of Bangley Hill	SK 16206 01121	Too isolated	CFA21
Water body	North-east of Brockhurst	SK 15430 02320	Too isolated	CFA21
Water body	West of Bourne Brook and Bourne Cut Corridor	SK 15019 02751	Too small and isolated	CFA21
Water body	West of Brockhurst Lane (locally known as Rookery Lane), south-east of Rough Leasow	SK 14721 02846	Too isolated	CFA21
Water body	East of Church Wood	SK 14783 03683	Not present following initial surveys	CFA21
Water body	South of A5, north-west of Weeford	SK 14735 04067	Too isolated	CFA21
Water body	North of Church Wood	SK 15161 03900	Too isolated	CFA21
Water body	South of Church Wood	SK 14710 04095	Too isolated	CFA21
Water body	North of A5, north-east of Weeford	SK 14823 04136	Dry	CFA21
Water body	North-west of Hints	SK 15280 03804	Too isolated	CFA21
Water body	East of Hare Park Wood	SK 14196 04327	Too isolated	CFA21
Water body	South of A5, north-west of Weeford	SK 14442 04353	Man-made garden pond	CFA21
Water body	West of Packington Moor	SK 14857 06451	Too isolated	CFA21
Water body	Whittington Health Golf Club	SK 14609 07326	Too isolated	CFA22
Water body	West of Whittington	SK 14867 08315	Too isolated	CFA22
Water body	West of Whittington	SK 14898 08428	Too isolated	CFA22
Water body	West of Whittington	SK 14869 08269	Too isolated	CFA22
Water body	West of Whittington	SK 14677 08350	Too isolated	CFA22
Water body	South of Wyrley and Essington Canal	SK 15026 08881	Too isolated	CFA22

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	South of Wyrley and Essington Canal	SK 14975 08803	Too isolated	CFA22
Water body	West of Huddlesford	SK 14628 09512	Field drain, fairly isolated and mostly dry	CFA22
Water body	East of Fulfen Wood	SK 14748 09439	Isolated field drain along road	CFA22
Water Body	Two large ponds to north of Mare Brook, Streethay	SK 14121 11478	Too isolated	CFA22
Water body	North of Streethay	SK 14579 10131	Too isolated	CFA22
Water body	North-east of Streethay	SK 14453 10812	Too isolated	CFA22
Water body	North-east of Streethay	SK 14370 10720	Too isolated	CFA22
Water body	North-east of Streethay	SK 14323 10798	Too isolated	CFA22
Water body	North-east of Streethay	SK 14348 10853	Too isolated	CFA22
Water body	West of Fradley Park	SK 13959 12566	Tank	CFA22
Water body	West of Fradley Park	SK 14458 12203	Over 100m from Proposed Scheme	CFA22
Water body	West of Fradley Park	SK 14040 12215	Dry	CFA22
Water body	Fradley Wood	SK 13467 13297	Dry	CFA22
Water body	South of Little Lyntus Wood	SK 13509 12755	Too isolated	CFA22
Water body	Fradley Wood	SK 13794 13277	Dry	CFA22
Water body	Fradley Wood	SK 13088 13053	Dry	CFA22
Water body	Fradley Wood	SK 13885 13385	Dry	CFA22
Water body	Fradley Wood	SK 13621 13305	Dry	CFA22
Water body	Fradley Wood	SK 13620 13282	Dry	CFA22
Water body	Fradley Wood	SK 13613 13680	Dry	CFA22
Water body	Fradley Wood	SK 13500 13404	Dry	CFA22
Water body	West of Fradley Lock	SK 13172 14029	Over 100m from Proposed Scheme	CFA22
Water body	Brokendown Wood	SK 13291 13581	Dry	CFA22
Water body	Brokendown Wood	SK 13363 13469	Not present	CFA22
Water body	West of Brokendown Wood	SK 13484 13699	Dry	CFA22
Water body	Ravenshaw Wood	SK 12161 13744	Dry	CFA22
Water body	West of Ravenshaw Wood	SK 11759 14096	Dry	CFA22
Water body	North of Tomhay Wood	SK 11672 13751	Not present	CFA22
Water body	East of Kings Bromley Marina	SK 12247 14253	Too isolated	CFA22
Water body	East of Kings Bromley Marina	SK 11737 14500	Dry	CFA22
Water body	East of Kings Bromley Marina	SK 12275 14285	Too isolated	CFA22

Watercourse/ water body	Location	OS grid reference	Description and rationale for scoping watercourse/water body out of requirement for further survey	CFA
Water body	East of Kings Bromley Marina	SK 12196 14684	Too isolated	CFA22
Water body	South of Kings Bromley Marina	SK 10631 14274	Too isolated	CFA22
Water body	East of Harveys Rough	SK 10469 14394	Too isolated	CFA22
Water body	North-east of Harveys Rough	SK 10248 14572	Too isolated	CFA22
Water body	Hanch Reservoir	SK 10220 13715	Too far from Proposed Scheme	CFA22
Water body	East of Ashton Hays	SK 10340 14619	Not present	CFA22
Water body	East of Ashton Hays	SK 10328 14628	Too isolated	CFA22
Water body	North-east of Harveys Rough	SK 10241 14456	Too isolated	CFA22
Water body	North-east of Harveys Rough	SK 10462 14344	Too isolated	CFA22
Water body	Newtown	SK 10362 14650	Dry	CFA22
Water body	North of Hanch Reservoir	SK 10425 14560	Dry	CFA22
Water body	North of Ashton Hays	SK 09411 14960	Too isolated	CFA22
Water body	East of Handsacre	SK 09424 15294	Too isolated	CFA22
Water body	East of Handsacre	SK 09428 15308	Too isolated	CFA22

4.3 Deviations, constraints and limitations

4.3.1 Deviations from the standard methodology for water vole surveys had to be made on several watercourses due to access constraints. Where access was granted late in the survey period, a total of two survey visits, one in the early season (mid-April to June) and another in late season (July to September) could not be undertaken and thus the spacing of surveys and the total number of surveys had to be reduced. This is recorded in Table 161.

4.3.2 The water vole surveys encountered the following limitations:

- access restrictions within CFA16 (Ladbroke and Southam) resulted in limited survey of the River Itchen (030-WV-120002, 030-WV2-126001) as well as two connected unnamed tributaries of the River Itchen (030-WV-120001 and 030-WV-126003). The lack of survey data for these reaches was considered a significant limitation in establishing the presence of water vole due to the transient nature of the species and the potential for localised water vole presence. The presence of water voles on these watercourses is therefore assumed following a precautionary approach;
- one survey undertaken on the Oxford Canal on 18 August 2012 in CFA16 was undertaken by canal boat and recorded habitat suitability and the presence of water vole burrows only. It did not include discreet features (i.e. feeding signs and droppings). However a repeat survey undertaken on 23 April 2013 achieved a thorough inspection of the watercourse;

- access permission to the northern crossing of the River Itchen in CFA16 (030-WV2-126001) was obtained in June 2013 with moderate access. Only one survey was conducted on the River Itchen for water vole. No access was obtained to the southern crossing. Surveys of the River Itchen were considered to be limited for this species;
- an unnamed tributary of the River Itchen (030-WV-127003) in CFA16 was not initially within 100m of the land required for construction of the Proposed Scheme and as such was not included in the surveys. However this watercourse is located on the boundary of the land required for the construction of the Proposed Scheme and thus lack of survey data is not considered to be a significant limitation to survey effort;
- the northern banks of the River Leam (030-WV2-132002) in CFA17 were inaccessible due to no access permission and so a full detailed assessment was not possible. Suitable marginal and emergent vegetation was present along the northern bank and thus surveys from the south bank using binoculars were limited and may have missed some more discreet features. However it is considered unlikely that evidence of this species would be limited to the northern river bank due to the presence of suitable marginal and emergent vegetation on both sides of the river and thus was not considered to be a significant limitation to survey effort;
- access to small reaches of the unnamed tributary watercourse of the River Leam in the woodland at Ash Beds (030-WV1-131001) in CFA17 was restricted by dense scrub. However it is considered not to be a significant limitation due to the likely lack of suitable and marginal vegetation as a result of over shading along these reaches. Overall habitat suitability of this watercourse was considered to be poor and the presence of water voles scoped out on this watercourse;
- an approximate 50m reach of the southern section of an unnamed Drain – M6 drainage (Tributary of the Cole) (030-WV2-161003) in CFA19 could not be fully surveyed due to the presence of cattle, including bulls (landowner advised surveyors not to enter);
- two water bodies in CFA19 (030-WV2-161003 and 30-WV2-176004) were subject to only one survey due to late land access permission. However due the exposed nature of drain 030-WV2-161003 and the location of 030-WV2-176004 outside of the land required for the construction of the Proposed Scheme this was considered to be a significant limitation to survey effort; and
- an unnamed pond (030-WV1-188003) in Brokendown Wood in CFA22 was not surveyed as the steep banks were considered a health and safety risk. However this water body was subsequently considered unsuitable for water vole due to its stagnant and shallow nature (based on phase 1 survey results) and thus was not considered to be a significant limitation to survey effort.

4.3.3 The watercourses and water bodies where no surveys were possible due to access limitations are presented in Table 190.

Table 190: Watercourses/water bodies with no access in CFA16 to CFA22 inclusive

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	CFA
030-WV-119001	Unnamed drain at Church Farm (drains to a tributary of the R Itchen)	Drain	SP4472556025 to SP4464955720	CFA16
030-WV-120001	Unnamed tributary watercourse of the River Itchen	Ordinary watercourse	SP4375456474 to SP4457156487	CFA16
030-WV-120002	River Itchen (source to confluence with R Stowe)	Ordinary watercourse	SP4438757138 to SP4364656760	CFA16
030-WV-120003	Chapel Bank Cottage ponds	Ponds	SP4416557027	CFA16
030-WV-122001	Unnamed tributary watercourse of the River Itchen at Ladbroke	Ordinary watercourse	SP4276658348 to SP4346358780	CFA16
030-WV-122002	Unnamed drain at Ladbroke (Drains to Tributary of Itchen)	Drain	SP4282858339 to SP4284858169	CFA16
030-WV-122006	Pond to immediate north of Ladbroke Fox Covert	Pond	SP4295358368	CFA16
030-WV-122007	Pond to north-west of Ladbroke Fox Covert	Pond	SP4285458348	CFA16
030-WV-123004	Pond A to east of Banbury Road, Ladbroke	Pond	SP4180159555	CFA16
030-WV-123005	Pond B to east of Banbury Road, Ladbroke	Pond	SP4184459624	CFA16
030-WV-126002	Unnamed tributary watercourse of the River Itchen associated with landfill site	Ordinary watercourse	SP4002561355 to SP3989561331	CFA16
030-WV-126003	Unnamed tributary watercourse of the River Itchen at Lower Farm	Ordinary watercourse	SP3976761613 to SP4006661459	CFA16
030-WV-126005	Field pond near to tributary of the River Itchen	Pond	SP3976761613	CFA16
030-WV-127003	Unnamed tributary watercourse of the River Itchen at Bascote Heath	Ordinary watercourse	SP3961562443 to SP4004962596	CFA16
030-WV-127005	Drain south of Long Itchington Wood	Drain	SP3914062418 to SP3896462353	CFA16
030-WV-129001	Unnamed tributary watercourse of the River Leam	Ordinary watercourse	SP3779563837 to SP3882864104	CFA17
030-WV-129003	Unnamed tributary watercourse of the River Leam at Lower Print Farm	Ordinary watercourse	SP3863664030 to SP3863764401	CFA17
030-WV-129005	Pond to south of Grand Union Canal near Welsh Road Bridge	Pond	SP3849163869	CFA17
030-WV-129006	Pond to south of Grand Union Canal near Longhole Bridge	Pond	SP3813163836	CFA17
030-WV-132001	Unnamed Drain (Draining to the Leam) at Manor Farm, Offchurch	Drain	SP3604766311 to SP3648565959	CFA17

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	CFA
030-WV-133002	Pond to north of River Leam at Lower Grange, Cubbington	Pond	SP3552267450	CFA17
030-WV-135001	Pingle brook	Ordinary watercourse	SP3463068410 to SP3469468702	CFA17
030-WV-136001	Unnamed tributary watercourse A of River Avon	Ordinary watercourse	SP3457869996 to SP3485569742	CFA17
030-WV-136002	Unnamed tributary watercourse B of River Avon	Ordinary watercourse	SP3457869996 to SP3528669496	CFA17
030-WV-136004	Unnamed tributary watercourse of River Avon at Cotton Mill Spinney	Ordinary watercourse	SP3339369930 to SP3388169593	CFA17
030-WV-136006	Pond at Furzen Hill Farm	Pond	SP3456370059	CFA18
030-WV-143003	Pond in Crackley Wood	Pond	SP2905974332	CFA18
030-WV-168003	Unnamed Stream at Middleton House Farm (tributary of Middleton Hall Catch (tributary of Langley Brook))	Ordinary watercourse	SP1866996133 to SP1937296134	CFA20
030-WV-168008	Drains in North Wood	Drain	SP1917096002	CFA20
030-WV-168010	Drain associated with Kingsbury Water Park	Drain	SP2006595765 to SP2008796215	CFA20
030-WV-169001	Unnamed Stream (tributary of Middleton Hall Catch (tributary of Langley Brook))	Ordinary watercourse	SP1953096908 to SP1829896817	CFA20
030-WV-169002	Unnamed Stream (tributary of Langley Brook)	Ordinary watercourse	SP1947497042 to SP1829896817	CFA20
030-WV-169003	Pond to north of Maple Leaf Farm	Pond	SP1872196489	CFA20
030-WV-170004	Pond at Middleton Quarry	Pond	SP1896297155	CFA20
030-WV-173004	Pond to east of Upper House Farm	Pond	SP1743699525	CFA20
030-WV-173010	Pond to south of Shirral Drive, Drayton Bassett	Pond	SP1721700088	CFA21
030-WV-183004	Pond to north of Wyrley and Essington Canal, Whittington	Pond	SK1495909493	CFA22
030-WV-183005	Pond to north of Wyrley and Essington Canal, Whittington	Pond	SK1500009516	CFA22
030-WV-184002	Pond in Fulfen Wood, Whittington	Pond	SK1466809656	CFA22
030-WV-184003	Pond A to east of Fulfen Wood	Pond	SK1483709824	CFA22
030-WV-184004	Pond B to east of Fulfen Wood	Pond	SK1486709718	CFA22

Ecology survey code	Water course or water body name	Feature type	OS grid reference (start and finish)	CFA
030-WV-186007	Pond A to west of unnamed watercourse at Fradley Business Park	Pond	SK1398911962	CFA22
030-WV-186008	Pond B to west of unnamed watercourse at Fradley Business Park	Pond	SK1404212008	CFA22
030-WV-189007	Unnamed drain (becomes a tributary of the Pyford Brook Catchment (tributary of River Trent))	Drain	SK1201014287 to SK1245214676	CFA22
030-WV-190009	Marina	Pond	SK1133814751	CFA22
030-WV-192002	Pond associated with unnamed drain, Handsacre	Pond	SK0963615398	CFA22

4.4 Baseline

Overview

- 4.4.1 The water vole is in serious decline in both Warwickshire and Staffordshire as well as in the UK as a whole¹⁹⁶. This is due to a number of factors including the loss of habitat, population fragmentation leading to isolation of colonies, pollution and predation.
- 4.4.2 Two national surveys were undertaken by the Vincent Wildlife Trust between 1989 and 1990 and between 1996 and 1998; these showed a 67.5% loss in sites previously known to be occupied by water voles and an 88% decline of the remaining population in only seven years¹⁹⁷.
- 4.4.3 Current trends indicate the continued decline of water voles in Warwickshire. These trends continue despite measures undertaken by Warwickshire County Council under the Warwickshire and Solihull Biodiversity Action Plan (BAP) species action plan for water voles, which includes aims to maintain and increase population size¹⁹⁸. The results of surveys in Warwickshire reflect the national trend; with their status described as “the main meta-population in the county surviving as a number of fragmented colonies in the Coventry/Nuneaton area (on the Rivers Sowe and Anker and their tributaries, plus the Coventry Canal). With the exception of a couple of isolated colonies recorded elsewhere, the water vole appears to have all but disappeared from the rest of the county”¹⁹⁹.
- 4.4.4 The status of water voles in Staffordshire also reflects the national trend with known breeding sites for water voles dropping from 106 in 1996 to just 29 by 2001²⁰⁰.

¹⁹⁶ Warwickshire Wildlife Trust; Water Vole Surveying; <http://www.warwickshire-wildlife-trust.org.uk/conservation/wetlands/water-vole-surveying.aspx>; Accessed: 15 September 2012.

¹⁹⁷ Strachan, R. (2003), *The Water Vole and Mink Survey of Britain 1996-1998 with a History of the Long-Term Changes in the Status of Both Species and their Causes*. Ledbury: The Vincent Wildlife Trust.

¹⁹⁸ Jones, M. (2002), Warwickshire County Council, Action for Wildlife, Warwickshire, Coventry and Solihull Local Biodiversity Action Plan Water Vole (*Arvicola terrestris*).

¹⁹⁹ Jones, M. (2002), Warwickshire County Council, Action for Wildlife, Warwickshire, Coventry and Solihull Local Biodiversity Action Plan Water Vole (*Arvicola Terrestris*); [http://www.warwickshire.gov.uk/Web/corporate/pages.nsf/Links/664C36342CE8DE8180256E910041C62C/\\$file/WaterVole.pdf](http://www.warwickshire.gov.uk/Web/corporate/pages.nsf/Links/664C36342CE8DE8180256E910041C62C/$file/WaterVole.pdf); Accessed: 15 August 2012.

²⁰⁰ Staffordshire Moorlands District Council; *Water Voles Under Threat* http://jadu.staffs Moorlands.gov.uk/site/scripts/documents_info.php?documentID=270&pageNumber=2, accessed 20 August 2012.

- 4.4.5 Any water voles present are likely to be restricted to a small number of viable populations.
- 4.4.6 Of the surveys conducted in 2012 and 2013, confirmed evidence of water vole populations was found in two locations associated with the River Tame in CFA19 and the Black-Bourne Brook in CFA21.

CFA16 Ladbroke and Southam

- 4.4.7 There are no confirmed records of water vole from surveys within the Ladbroke and Southam area.
- 4.4.8 There are eight watercourses and twelve water bodies within the Ladbroke and Southam area.
- 4.4.9 The Proposed Scheme directly crosses a total of four watercourses, including the Oxford Canal (030-WV2-118001), the River Itchen at two locations (030-WV-120002 and 030-WV2-126001) and two unnamed tributary watercourses of the River Itchen (030-WV-120001 and 030-WV-122001).
- 4.4.10 There are two unnamed tributary watercourses of the River Itchen (030-WV2-123001 and 030-WV-127003) and five water bodies (unnamed drain at Church Farm 030-WV-119001, Chapel Bank Cottage Ponds 030-WV-120003, pond to immediate north of Ladbroke Fox Covert 030-WV-122006, field pond near to tributary of River Itchen 030-WV2-123002 and ornamental pond within Dallas Burston Polo Grounds 030-WV1-127001) located within the land required for the construction of the Proposed Scheme.
- 4.4.11 A further two watercourses (unnamed tributary watercourse of the River Itchen associated with landfill site 030-WV-126002 and unnamed tributary watercourse at Lower Farm 030-WV-126003) and six water bodies (unnamed drain at Ladbroke 030-WV-122002, pond to northwest of Ladbroke Fox Covert 030-WV-122007, pond A to east of Banbury Road, Ladbroke 030-WV-123004, pond B to east of Banbury Road, Ladbroke 030-WV-123005, field pond near tributary of River Itchen 030-WV-126005, drain running through Long Itchington and Ufton Wood SSSI 030-WV1-127002 and drain south of Long Itchington Wood 030-WV-127005) are located outside the land required for the construction of the Proposed Scheme.
- 4.4.12 Of these the Oxford Canal (030-WV2-118001), one unnamed tributary watercourse of the River Itchen (030-WV2-123001), the River Itchen (030-WV2-126001), one ornamental pond within the Dallas Burston Polo Grounds (030-WV1-127001) and the drain running through Long Itchington and Ufton Wood SSS (030-WV1-127002) have been subject to survey.
- 4.4.13 Survey results suggest that water voles are currently absent from the reaches of the Oxford Canal within the land required for the construction of the Proposed Scheme. This is supported by further information obtained on the Oxford Canal which indicates that a water vole population was present two to three years ago but is now thought to be extinct²⁰¹. There are five records of water vole on the River Itchen and its associated tributaries ranging from 1997 to 2001, the closest record located approximately 230m

²⁰¹ Pers. Comm. between Katrena Stanhope (Atkins) and Peter Sanders (County Recorder – Warwickshire Wildlife Trust) 11/07/12.

east of the land required for the construction of the Proposed Scheme in 2001. Survey results suggest water voles are currently absent on the reach of the River Itchen that were subject to survey (030-WV2-126001).

- 4.4.14 No evidence of water voles was found on the unnamed tributary of the River Itchen (030-WV2-123001). This watercourse provides some habitat suitability for water voles.
- 4.4.15 Due to the small extent of survey undertaken on reaches of the River Itchen (030-WV-120002 and 030-WV2-126001) as well as two connected unnamed tributary watercourses of the River Itchen (030-WV-120001 and 030-WV-126003), positive desk study information on the River Itchen (2001) and the transient nature of the species, a precautionary approach has been adopted on these watercourses and it has been assumed that water voles are present.
- 4.4.16 Water voles are assumed absent on the drain running through Long Itchington and Ufton Wood SSSI (030-WV1-127002) and associated pond (030-WV1-127001) due to their isolated nature in relation to other watercourses and thus were scoped out from further survey.
- 4.4.17 A further unnamed tributary watercourse of the River Itchen (030-WV-122001) has not been subject to survey within this area. There is no supporting data to indicate any known current water vole colonies are present on these watercourses.
- 4.4.18 On the basis of the survey results and supporting desk study information there is considered to be potential for a remnant population of water voles on the River Itchen and associated tributaries at Lower Radbourne as they pass within the land required for the Proposed Scheme. Water vole presence is considered unlikely on the remainder of watercourses or water bodies within the Ladbroke and Southam study area as they pass within the land required for the Proposed scheme.

CFA17 Offchurch and Cubbington

- 4.4.19 There are 10 watercourses and four water bodies within the Offchurch and Cubbington area. No water vole populations have been found on watercourses within the Offchurch and Cubbington area during surveys to support the ASSESSMENT.
- 4.4.20 The two main watercourses passing through this CFA comprise the River Leam (030-WV2-132002) and the Grand Union Canal (030-WV2-129002). Both are directly crossed by the Proposed Scheme alignment.
- 4.4.21 Two further small unnamed watercourses are crossed directly by the Proposed Scheme alignment within this area, comprising an unnamed tributary of the River Leam passing alongside the Grand Union Canal (030-WV-129001) and a further unnamed tributary of the River Leam at Ash Beds Wood (030-WV1-131002).
- 4.4.22 There are a further five watercourses located within the land required for the construction of the Proposed Scheme, comprising the Pingle Brook (030-WV-135001) and four unnamed watercourses (unnamed tributary watercourse A of the River Avon 030-WV-136001, unnamed tributary watercourse B of the River Avon 030-WV-136002, unnamed tributary watercourse of the River Avon 030-WV2-136003 and an unnamed tributary watercourse of the River Avon at Cotton Mill Spinney 030-WV-136004).

- 4.4.23 There are three water bodies (pond to south of Grand Union Canal near Welsh Road Bridge 030-WV-129005, a pond to south of Grand Union Canal near Longhole Bridge 030-WV-129006 and an unnamed drain draining into the River Leam 030-WV-132001) located within the land required for the construction of the Proposed Scheme.
- 4.4.24 A further one unnamed tributary watercourse of the River Leam at Lower Print Farm (030-WV-129003) and one water body pond to north of River Leam at Lower Grange (030-WV-133002) are located outside the land required for the construction of the Proposed Scheme.
- 4.4.25 Four of these watercourses have been surveyed for water vole; comprising the Grand Union Canal (030-WV2-129002), an unnamed tributary of the River Leam (030-WV1-131002), the River Leam (030-WV2-132002) and a further unnamed watercourse (030-WV2-136003). None of the four water bodies were surveyed within this area.
- 4.4.26 The survey results suggest that water voles are currently absent from the River Leam (030-WV2-132002). The presence of mink on this watercourse reach further reduces the likelihood of water voles being present within the land required for the construction of the Proposed Scheme.
- 4.4.27 The Grand Union Canal (030-WV2-129002) as it passes within the land required for the construction of the Proposed Scheme offers some small sections of natural bank which provide suitable habitat for water voles. However much of this reach is engineered metal railed banks with no marginal and emergent vegetation which offers very limited suitability for water voles.
- 4.4.28 Habitat suitability of an unnamed tributary of the River Leam at Ash Beds Wood (030-WV1-131002) is considered to be negligible due to the watercourses heavily shaded nature and lack of marginal and emergent vegetation and thus has been scoped out of further assessment.
- 4.4.29 Surveys of an unnamed tributary watercourse of the River Avon at Furzon Hill Farm (030-WV2-136003) within the land required for the construction of the Proposed Scheme recorded no evidence of this species despite offering some habitat suitability.
- 4.4.30 A further five watercourses within this area have not been surveyed. There is no supporting data to indicate that there are any known current water vole colonies on these watercourses.
- 4.4.31 On the basis of the survey results, supporting desk study information and reported status of water vole colonies in Warwickshire it is considered unlikely that water voles are present on watercourses and water bodies within the Offchurch and Cubbington study area as they pass within the land required for the construction of the Proposed Scheme. The presence of mink within this area reduces the likelihood of water voles being present within the land required for the construction of the Proposed Scheme.

CFA18 Stoneleigh, Kenilworth and Burton Green

- 4.4.32 There are 11 watercourses and 12 water bodies within the Stoneleigh, Kenilworth and Burton Green area. There were no confirmed records of water vole found within the Stoneleigh, Kenilworth and Burton Green area during surveys to support the ASSESSMENT.

- 4.4.33 The Proposed Scheme directly crosses a total of five watercourses and one water body, including the River Avon (030-WV2-139001), Finham Brook (030-WV2-141001), Canley Brook (030-WV2-141002), two unnamed tributary watercourses of the Canley Brook (030-WV1-142001 and 030-WV2-145001) and an unnamed drain of the Canley Brook (030-WV2-146001).
- 4.4.34 There are four watercourses and four water bodies located within the land required for the construction of the Proposed Scheme, comprising an unnamed tributary watercourse of the River Avon at Furzon Hill Farm (030-WV2-136003), a reach of the River Avon (030-WV2-138001), an unnamed tributary watercourses of the River Avon associated with Hare's Parlour (030-WV1-138002) and an unnamed tributary watercourse of the River Avon in west of unnamed woodland (030-WV1-139003) and water bodies at (Pond at Furzen Hill Farm 030-WV-136006, ponds to the north of Dalehouse Farm 030-WV2-141004, a pond to the north of Dalehouse Farm 030-WV2-141005 and a pond to the east of Dalehouse Farm 030-WV1-141007).
- 4.4.35 There are a further two watercourses (River Sowe 030-WV2-139001 and an unnamed tributary watercourse of the River Avon in east of unnamed woodland 030-WV1-139004) and seven unnamed ponds; a pond to the south of Dalehouse Farm 030-WV1-141003, a pond to the south of Milburn Grange 030-WV2-141006, a pond in Crackley Wood 030-WV-143003, a pond at South Hurst Farm 030-WV2-144004, a pond near Brockendon Grange Farm 030-WV1-145004, the southern pond in Broadwells Wood 030-WV1-145005 and the northern pond in Broadwells Wood 030-WV1-145006) located outside the land required for the construction of the Proposed Scheme within the Stoneleigh, Kenilworth and Burton Green area.
- 4.4.36 The following watercourses and water bodies have been surveyed for water vole activity:
- unnamed tributary watercourse of River Avon (030-WV2-136003);
 - River Avon (030-WV2-138001 and 030-WV2-139001);
 - unnamed tributary watercourse of River Avon at Hare's Parlour(030-WV2-138002);
 - unnamed tributary watercourse of River Avon in the west of unnamed woodland (030-WV1-139003);
 - unnamed tributary watercourse of River Avon in the east of an unnamed woodland (030-WV1-139004);
 - River Sowe (030-WV2-139002);
 - Finham Brook (030-WV2-141001);
 - Canley Brook (030-WV2-141002);
 - two unnamed tributary watercourses of the Canley Brook (030-WV2-145001 and WV1-142001);
 - unnamed drain of the Canley Brook (030-WV2-146001); and
 - nine unnamed water bodies: a pond to the south of Dalehouse Farm 030-WV1-

141003, ponds to the north and east of Dalehouse Farm 030-WV2-141004, 030-WV2-141005 and 030-WV-141007, a pond to the south of Milburn Grange 030-WV2-141006, a pond at South Hurst Farm 030-WV2-144004, a pond near Brockendon Grange Farm 030-WV1-145004, the southern pond in Broadwells Wood 030-WV1-145005 and the northern pond in Broadwells Wood 030-WV1-145006.

- 4.4.37 No current water vole populations have been found on watercourses within this area. This is despite 36 records of water vole on the Canley Brook between 1998 and 2007, the closest of which is located approximately 320m north-east of the land required for the construction of the Proposed Scheme.
- 4.4.38 Due to the large extents of the Canley Brook and Finham Brook surveyed for water voles as part of the baseline assessment and the presence of mink on these watercourse reaches it is assumed that water voles are currently absent from the reaches of the Canley Brook (030-WV2-141002), Finham Brook (030-WV2-141001) and associated tributaries (030-WV1-142001 and 030-WV2-145001) as they pass within the land required for the construction of the Proposed Scheme. However it is possible that there are populations of water vole on adjacent reaches of the Canley Brook to the north of the land required for the construction of the Proposed Scheme.
- 4.4.39 Surveys of the River Avon, River Sowe and their tributaries indicate current absence of water vole within the land proposed for the construction of the Proposed Scheme despite offering some habitat suitability (good marginal and emergent vegetation cover) along parts of their reaches.
- 4.4.40 There are two water bodies within this area (030-WV-136006 and 030-WV-143003) that have not been surveyed, one of which is located within the land required for the construction of the Proposed Scheme. There is no supporting data to indicate that there are any known current water vole colonies on these water bodies.
- 4.4.41 Habitat suitability of an unnamed tributary watercourse of the Canley Brook (030-WV1-142001) is considered to be negligible due to the watercourse's dry nature and lack of supporting marginal and emergent vegetation and as a result was scoped out from further survey.
- 4.4.42 Two unnamed tributary watercourses of the River Avon located to the east and west of an unnamed woodland respectively (030-WV1-139003 and 030-WV1-139004) were also of negligible value for water voles as they lack bank side vegetation.
- 4.4.43 Two unnamed ponds (pond to the south of Dalehouse Farm 030-WV1-141003 and pond to the east of Dalehouse Farm 030-WV1-141007) were scoped out after habitat assessment as they no longer existed. A further two unnamed ponds (pond near Brockendon Grange 030-WV1-145004 and the southern pond in Broadwells Wood 030-WV1-145005) were scoped out due to their dry or isolated nature and the unnamed northern pond in Broadwells Wood 030-WV1-145006 was a shallow woodland pond with no bank side vegetation so was also of negligible suitability for water vole.
- 4.4.44 On the basis of the survey results, supporting desk study information and reported status of water vole colonies in Warwickshire it is considered unlikely that water voles are present on watercourses and water bodies within the Stoneleigh, Kenilworth and Burton Green area as they pass within the land required for the construction of the

Proposed Scheme. The presence of mink within this area reduces the likelihood of water voles being present within the land required for the construction of the Proposed Scheme.

CFA19 Coleshill Junction

- 4.4.45 There are eight watercourses and nine water bodies within the Coleshill Junction area. Water vole presence has been confirmed during surveys to support the ASSESSMENT.
- 4.4.46 The Proposed Scheme directly crosses a total of six watercourses within CFA19, including the River Cole at two locations (030-WV2-160002), River Tame (030-WV2-164002), three unnamed tributary watercourses of the River Cole (030-WV1-160001, 030-WV1-1610001 and 030-WV1-162002) and one unnamed tributary watercourse of the River Tame (030-WV1-163001).
- 4.4.47 A flooded lagoon within the Coleshill Sewage Works Grassland LWS (030-WV2-164001) and seven further water bodies are located within the land required for the construction of the Proposed Scheme. These include a pond to north of the Belt woodland (030-WV1-162005), a pond to the south of the Belt woodland (030-WV1-162006), a pond within the Belt woodland (030-WV1-162007), a large pond to the south of an unnamed tributary of the River Tame, Water Orton (030-WV1-163003), a pond to north of an unnamed tributary of the River Tame, Water Orton (030-WV1-163004), a small pond to the south of an unnamed tributary of the River Tame, Water Orton (030-WV1-163005) and a drain into an unnamed tributary watercourse of the River Tame (030-WV1-163006).
- 4.4.48 There are two further unnamed tributary watercourses of the River Cole at the Catmore (030-WV1-161004) and at Grimstock (030-WV1-162001) and one water body comprising a drain associated with the M6 motorway (030-WV1-161003) which fall outside of the land required for the construction of the Proposed Scheme.
- 4.4.49 All watercourses and water bodies within CFA19 area have been surveyed for this species. Table 191 summaries water vole activity recorded.

Table 191: Summary of water vole activity identified within CFA19

Ecology survey code	Name of watercourse	Location	OS grid reference	Nature of record	Distance from the Proposed Scheme (m) and orientation
030-WV2-164001	Flooded lagoon	Coleshill Sewage Works Grassland LWS	SP 18858 91357	Multiple feeding stations and occasional latrines found around perimeter of lagoon, runs throughout rushes.	Within the Proposed Scheme
030-WV2-164002	River Tame	Coleshill Sewage Treatment Works	SP19136 91466	Footprints which may be attributed to water vole in soft mud.	Within the Proposed Scheme
030-WV2-164002	River Tame	Coleshill Sewage Treatment Works	SP19175 91438	Potential water vole footprints in mud beneath bridge	Within the Proposed Scheme

- 4.4.50 A water vole population is present on the flooded lagoon (030-WV2-164001) within Coleshill Sewage Works Grassland LWS located within 100m of the River Tame.

Footprints that may be attributed to water vole were also observed on the adjacent reach of the River Tame (030-WV2-164002).

- 4.4.51 Desk study data indicates one record of water vole in 2003 at Kingsbury Water Park located approximately 640m east of the land required for the construction of the Proposed Scheme. The flooded lagoon has connectivity with Kingsbury Water Park via the River Tame. The presence of a population of water vole at Kingsbury Water Park and the connectivity between this population and the flooded lagoon via the River Tame indicates the potential importance of the River Tame as at least a connective corridor between these two water vole colonies, providing potential for exchange of individuals and strengthening the viability of these water vole populations.
- 4.4.52 Habitat suitability of the River Cole (030-WV2-160002) was considered to be limited for water voles due to the exposed nature of its reaches as it passes within the land required for the construction of the Proposed Scheme with an overall scoured bank and lack of marginal and emergent vegetation cover. No evidence of water vole was recorded on this watercourse.
- 4.4.53 Suitability of a further unnamed tributary watercourse of the River Cole (030-WV1-162001) was considered to offer some features offering suitable habitat for water voles but no evidence of this species was found during the surveys.
- 4.4.54 Four unnamed tributary watercourses of the River Cole (030-WV1-160001, 030-WV1-161001, 030-WV1-161004 030-WV1-162002 and one unnamed tributary watercourse of the River Tame (030-WV1-163001) were all considered to be of negligible habitat suitability for water voles due to their bare banks with a lack of marginal and emergent vegetation and were scoped out from further assessment. In addition two of these watercourses are isolated as a result of large reaches of these watercourses being in culvert (associated with the M6 motorway).
- 4.4.55 Water voles are assumed absent on the unnamed drain M6 drainage (030-WV2-161003) following no evidence of water voles on this water body during the surveys and a further four ponds (a large pond to the south of an unnamed tributary of the River Tame, Water Orton 030-WV1-163003, a pond to the north of an unnamed tributary of the River Tame, Water Orton 030-WV1-163004, a small pond to the south of an unnamed tributary of the River Tame, Water Orton 030-WV1-163005 and a drain into an unnamed tributary watercourse of the River Tame 030-WV1-163006) that offer negligible habitat suitability for this species and thus were scoped out from further survey.
- 4.4.56 On the basis of the survey results, supporting desk study information and reported status of water vole colonies in Warwickshire it is considered unlikely that water voles are present on the River Cole or its associated tributary watercourses and water bodies within the Coleshill study area as they pass within the land required for the construction of the Proposed Scheme.

CFA20 Curdworth to Middleton

- 4.4.57 There are 10 watercourses and 19 water bodies within the Curdworth to Middleton area. There has been no confirmed water vole evidence found on watercourses during

surveys to support the assessment although footprints that may be attributed to water vole was found on the River Tame.

4.4.58 The Proposed Scheme directly crosses all 10 watercourses and two water bodies including:

- River Tame (030-WV2-164002);
- two unnamed tributary watercourses of the River Tame (030-WV1-164003 and 030-WV1-164004);
- Birmingham and Fazeley Canal (030-WV2-167001);
- two ponds adjacent to the Birmingham and Fazeley Canal (030-WV2-167002 and 030-WV2-167003);
- four unnamed tributary streams of Middleton Hall, tributaries of Langley Brook (030-WV2-168002, 030-WV-168003, 030-WV-169001 and 030-WV-169002);
- Langley Brook (030-WV2-171001); and
- Gallows Brook (030-WV2-172002).

4.4.59 There are nine water bodies within the land required for the construction of the Proposed Scheme, comprising two unnamed drains (unnamed drain, drains to River Tame 030-WV1-165001 and unnamed drain, drains to Middleton Hall 030-WV2-168001), Cuttle Mill Fisheries Ponds (030-WV1-168004, 030-WV1-168005 and 030-WV1-168006) and four unnamed ponds (ponds north of Gallows Brook at Brook Farm, Middleton 030-WV2-172004, a pond close to Gallows Brook at Brook Farm, Middleton 030-WV1-172006, Marl Pit at Brook Farm, Middleton 030-WV1-172007 and a small pond at Brook Farm, Middleton 030-WV1-172008).

4.4.60 A further eight water bodies are located outside the land required for the construction of the Proposed Scheme, comprising the drain in North Wood (030-WV-168008), a drain associated with Kingsbury Water Park, (030-WV-168010) and five water body groups (pond to the north of Maple Leaf Farm 030-WV-169003, ponds adjacent to Coneybury Wood 030-WV2-170002, a pond at Middleton Quarry 030-WV-170004, a large pond alongside Langley Brook 030-WV2-171002, a small reservoir/fishing lake at Brook Farm, Middleton 030-WV2-172003 and one pond to the east of Upper House Farm associated with 030-WV-173004).

4.4.61 The following watercourses and water bodies have been surveyed for water vole activity:

- River Tame (030-WV2-164002);
- two unnamed tributary watercourses of the River Tame (030-WV1-164003 and 030-WV1-164004);
- unnamed drain, drains to River Tame (030-WV1-165001);
- Birmingham and Fazeley Canal (030-WV2-167001);
- two ponds adjacent to the Birmingham and Fazeley Canal (030-WV2-167002

and 030-WV2-167003);

- two unnamed streams (unnamed drain, drains to Middleton Hall 030-WV2-168001 and unnamed stream tributary of Middleton Hall catchment, tributary of Langley Brook 030-WV2-168002);
- Cuttle Mill Fisheries Ponds (030-WV1-168004, 030-WV1-168005 and 030-WV1-168006);
- seven unnamed water body groups (ponds adjacent to Coneybury Wood 030-WV2-170002, large pond alongside Langley Brook 030-WV2-171002, small reservoir/fishing lake at Brook Farm, Middleton 030-WV2-172003, ponds north of Gallows Brook at Brook Farm, Middleton 030-WV2-172004, pond close to Gallows Brook at Brook Farm, Middleton 030-WV1-172006, Marl Pit at Brook Farm, Middleton 030-WV1-172007 and a small pond at Brook Farm, Middleton 030-WV1-172008);
- Langley Brook (030-WV2-171001); and
- Gallows Brook (030-WV2-172002).

4.4.62 Table 192 summaries water vole activity recorded.

Table 192: Summary of water vole activity identified within CFA20

Ecology survey code	Name of watercourse	Location	OS grid reference	Nature of record	Distance from the Proposed Scheme (m) and orientation
030-WV2-164002	River Tame	Coleshill Sewage Works	SP19136 91466	Footprints which may be attributed to water vole in soft mud.	Within the Proposed Scheme
030-WV2-164002	River Tame	Coleshill Sewage Works	SP19175 91438	Potential water vole footprints in mud beneath bridge	Within the Proposed Scheme

4.4.63 There are no confirmed water vole populations on watercourses within CFA20. However potential water vole footprints recorded on the River Tame are supported by confirmed water vole evidence on a flooded lagoon at Colehill Sewage Works grassland LWS within 100m south of the River Tame within CFA19 Colehill Junction.

4.4.64 Due to the confirmed presence in CFA19 south of the River Tame and the direct connectivity that exists between the River Tame and Kingsbury Water Park located approximately 640m east (where desk study records have highlighted water vole presence), it is considered that the River Tame is likely to provide connectivity between these two colonies (and thus provide exchanges of individuals between these two populations and strengthen the viability of these water vole populations).

4.4.65 Habitat suitability of the Birmingham and Fazeley Canal (030-WV2-160002) was considered to be limited for water voles due to the exposed nature of much of its reaches as it passes within the land required for the construction of the Proposed Scheme, with only small sections of its eastern bank providing sufficient marginal and emergent vegetation cover. No evidence of water voles was noted on the Birmingham and Fazeley Canal.

- 4.4.66 Surveys of two ponds adjacent to the Birmingham and Fazeley Canal (030-WV2-167002 and 030-WV2-167003) did not record any evidence of water voles and thus absence of this species is assumed.
- 4.4.67 Surveys of the Gallows Brook (030-WV2-172001), Langley Brook (030-WV2-171001) and an unnamed stream tributary of Middleton Hall catchment and unnamed drain, drains to Middleton Hall (030-WV2-168001 and 030-WV2-168002) indicate current absence of water vole within the land proposed for the construction of the Proposed Scheme despite offering habitat suitability (good marginal and emergent vegetation cover) along parts of their reaches. Three of the unnamed ponds associated with the Gallows Brook and Langley Brook (large pond alongside Langley Brook 030-WV2-171002, small reservoir/fishing lake at Brook Farm, Middleton 030-WV2-172003 and ponds north of Gallows Brook at Brook Farm Middleton 030-WV2-172004) were also suitable for water vole use but surveys indicated they are currently absent on these water bodies.
- 4.4.68 Two unnamed tributary watercourses of the River Tame (south and north) and an unnamed drain (drains to River Tame) were considered to be of negligible habitat suitability for water voles due to either concrete lined channel (030-WV1-164003) or heavily choked channel with poor bank profile (030-WV1-164004 and 030-WV1-165001).
- 4.4.69 The water bodies at Cuttle Mill Fisheries (030-WV1-168004, 030-WV1-168005 and 030-WV1-168006) were all considered unsuitable due to their artificial re-enforced banks and low food availability. Similarly water bodies associated with the Middleton Hall Farm Quarry and its associated pool (030-WV1-170001 and 030-WV1-170005) were scoped out for this species due to their exposed, sheer banks with little marginal vegetative cover.
- 4.4.70 Three unnamed ponds associated with the Gallows Brook and Langley Brook (pond close to Gallows Brook at Brook Farm WV1-172006, Marl Pit at Brook Farm, Middleton 030-WV1-172007 and Small pond at Brook Farm, Middleton 030-WV1-172008) were also unsuitable for water vole due to their isolated, dry or stagnant nature.
- 4.4.71 It is likely that a population of water vole is present on the River Tame associated with the population observed in CFA19. On the basis of the survey results, supporting desk study information and reported status of water vole colonies in Warwickshire It is considered unlikely that water voles are present on the remainder of watercourses and water bodies within the Curdworth to Middleton study area as they pass within the land required for the construction of the Proposed Scheme.

CFA21 Drayton Bassett, Hints and Weeford

- 4.4.72 There are seven watercourses and 11 water bodies within the Drayton Bassett, Hints and Weeford area. A water vole population was confirmed immediately adjacent to the Black-Bourne Brook during surveys to support the assessment.
- 4.4.73 The Proposed Scheme directly crosses a total of six watercourses and one water body, including the Gallows Brook (030-WV2-172002), two unnamed tributary watercourses of the River Tame (030-WV2-173001 and 030-WV1-173002), an unnamed pond (pond to the south of Shirral Drive, Drayton Bassett 030-WV-173010), two unnamed tributary

watercourses of the Black-Bourne Brook (030-WV1-175001 and 030-WV1-175002) and the Black-Bourne Brook (030-WV2-177001).

- 4.4.74 There are three water bodies located within the land required for the construction of the Proposed Scheme, comprising an unnamed drain becoming a tributary of the Black-Bourne Brook (030-WV1-175002 and two unnamed drains associated with the Black-Bourne Brook (030-WV1-177005 and 030-WV2-177009).
- 4.4.75 A further watercourse (stream and large pond associated with Moor Covert 030-WV1-179001) and six water bodies (a pond to the south of Snake's Hill, Hints 030-WV2-176002, a pond to the north-east of Brock Hurst Farm 030-WV2-176004, a pond to the south of Black-Bourne Brook 030-WV2-177002, a pond to the north of Black-Bourne Brook 030-WV1-177003, an unnamed drain at Bourne House, Weeford 030-WV1-177007 and a pond in Snakes Hill Wood, Hints 030-WV2-177008) are located outside the land required for the construction of the Proposed Scheme.
- 4.4.76 The following watercourses and water bodies have been surveyed for water vole activity:
- Gallows Brook (030-WV2-172002);
 - two unnamed tributary watercourses of the River Tame (030-WV2-173001 and 030-WV1-173002);
 - two unnamed tributary watercourses of the Black-Bourne Brook (030-WV1-175001 and 030-WV1-175002);
 - Black-Bourne Brook (030-WV2-177001);
 - unnamed stream and large pond associated with Moor Covert (030-WV1-179001); and
 - unnamed drain at Woodside Farm (becomes a tributary of the Black-Bourne Brook) 030-WV1-174002, pond to south of Snakes Hill, Hints 030-WV2-176002, pond to north-east of Black-Bourne Brook 030-WV2-176004, pond to south of Black-Bourne Brook 030-WV2-177002, pond to north of Black-Bourne Brook 030-WV1-177003, unnamed drain to immediate east of Black-Bourne Brook 030-WV1-177005, Unnamed drain at Bourne House, Weeford 030-WV1-177007, Pond in Snakes Hill Wood, Hints 030-WV2-177008 and drain associated with the Black-Bourne Brook 030-WV2-177009).
- 4.4.77 Table 193 summaries water vole activity recorded.

Table 193: Summary of water vole activity identified within CFA21

Ecology survey code	Name of watercourse	Location	OS grid reference	Nature of activity recorded	Distance from Proposed Scheme (m) and orientation
030-WV2-176002	Pond (associated with Black-Bourne Brook at Weeford)	Home Farm, School Lane, Hints, Staffordshire, B78 3DW	SK15550282 to SK15620285	Small group of water vole droppings. Feeding station in a circle of pressed down mud found close to the latrine. Potential water vole burrow in bank side.	Immediately adjacent to Proposed Scheme to east

- 4.4.78 A water vole population has been found to be present on a water body (030-WV2-176002) immediately adjacent to the Black-Bourne Brook within this area, located immediately adjacent to the east of the land required for the construction of the Proposed Scheme.
- 4.4.79 The desk study search highlighted one record of water vole on the Black-Bourne Brook located within the land required for the construction of the Proposed Scheme in 2001. There are further records of water vole on the Bourne Brook approximately 2.2km west of the Proposed Scheme from 2008.
- 4.4.80 Due to the immediate connectivity of this water body with the Black-Bourne Brook and the records of water vole on adjacent reaches of the brook as recent at 2008, it is considered likely that the brook is at least a commuting corridor for this water vole population providing potential for exchange of individuals and strengthening the viability of these water vole populations.
- 4.4.81 Suitability of the Gallows Brook (030-WV2-172002), an unnamed tributary watercourse of the River Tame at Brook Farm (030-WV2-173001) and five unnamed water bodies (pond to the north-east of Brock Hurst Farm 030-WV2-176004, a pond to the south of Black-Bourne Brook, 030-WV2-177002, a pond to the south of Black-Bourne Brook 030-WV2-177007, a pond in Snakes Hill Wood, Hints 030-WV2-177008 and a drain associated with Black-Bourne Brook 030-WV2-177009) was considered to provide some features offering suitable habitat for water voles but no evidence of this species was found during the surveys.
- 4.4.82 An unnamed tributary watercourses of the River Tame at Shirral Hall Farm (030-WV1-173002), unnamed drain (030-WV1-174002), two unnamed tributaries of the Black-Bourne Brook (030-WV1-175001 and 030-WV1-175002) and a further stream and associated large pond associated with Moor Covert (030-WV1-179001) were all considered to offer negligible habitat suitability for water voles due to either their over-shaded nature with bare banks providing limited cover and foraging opportunities for water vole or their partially dry nature. Three water bodies were also scoped out from further survey because they no longer exist (a pond to the north of Black-Bourne Brook 030-WV1-177003) or were too shallow with a lack of suitable bank profile (an unnamed drain at Woodside Farm 030-WV1-174002 and an unnamed drain to immediate east of Black-Bourne Brook 030-WV1-177005).
- 4.4.83 Water voles are present on a water body with immediate connectivity with the Black-Bourne Brook. Although no direct evidence of water voles was recorded on the Black-

Bourne Brook due to the immediate connectivity of this water body with the Black-Bourne Brook and the records of water vole on adjacent reaches of the brook as recent at 2008, it is considered likely that the brook is at least a commuting corridor for this water vole population.

- 4.4.84 On the basis of the survey results, supporting desk study information and reported status of water vole colonies in Staffordshire it is considered unlikely that water voles are present on the remainder of watercourses and water bodies within the Drayton Bassett, Hints and Weeford study area as they pass within the land required for the construction of the Proposed Scheme.

CFA22 Whittington to Handsacre

- 4.4.85 There are nine watercourses within the Whittington to Handsacre area, plus 24 water bodies. No confirmed evidence of water voles has been recorded during surveys to support the assessment.
- 4.4.86 The Proposed Scheme directly crosses a total of eight watercourses within this CFA area, including the Trent and Mersey Canal at three locations (030-WV2-188001), a disused section of the Wyrley and Essington Canal (030-WV1-183002), Curborough Brook (030-WV1-188002), Mare Brook (030-WV1-185001) and Bourne Brook (030-WV2-190001), as well as a further two unnamed tributary watercourses of the Mare Brook (030-WV1-184001 and 030-WV2-186001) and one unnamed tributary watercourse of the Fisherwick Brook (030-WV2-183001).
- 4.4.87 Three drains (drain/stream D in Ravenshaw Wood 030-WV1-189001, unnamed drain A becomes a tributary of the River Trent 030-WV1-191001 and unnamed drain B (becomes a tributary of Trent 030-WV1-192001) and one pond (pond to the north of Bourne Brook 030-WV1-190005) are also directly crossed by the route.
- 4.4.88 The Coventry Canal (030-WV2-183003), two drains (drain/stream B in Ravenshaw Wood 030-WV1-188009 and an unnamed drain that becomes a tributary of Pyford Brook 030-WV-189007) and eight ponds (030-WV2-186002, 030-WV1-186005, 030-WV2-186006, 030-WV-186007, 030-WV-186008, 030-WV1-188003, 030-WV1-190002, 030-WV1-190006) fall within the land required for the construction of the Proposed Scheme.
- 4.4.89 A further three drains (Black Slough Farm drain network 030-WV1-189003, drains/streams A in Ravenshaw Wood 030-WV2-188008 and drains/streams B in Ravenshaw Wood 030-WV2-188010) and seven ponds (ponds to the north of Wyrley and Essington Canal, Whittington 030-WV-183004 and 030-WV-183005, ponds to the east of Fulfen Wood 030-WV-184003 and 030-WV-184004, a pond north of the tributary of Mare Brook 030-WV1-185003, an unnamed drain becomes a tributary of Pyford Brook Catchment 030-WV1-188007 and Marina 030-WV 190009) are located outside the land required for the construction of the Proposed Scheme.
- 4.4.90 All nine watercourses, five drains and eight ponds have been subject to survey for water vole.
- 4.4.91 The presence of water vole remains were found within an otter spraint on the Bourne Brook (030-WV2-190001) suggesting that a water vole population may be present on other reaches of this watercourse or surrounding watercourses outside the land

required for the construction of the Proposed Scheme (although it should be noted that an otter's territorial range will typically extend over 15km). There are no supporting records of water vole presence on the Bourne Brook within this area.

- 4.4.92 Inconclusive evidence (feeding signs) was also found on a pond (030-WV2-186006) adjacent to an unnamed tributary of the Mare Brook at Fradley Business Park (030-WV2-186001). However, evidence of mink has been found on the unnamed tributary of the Mare Brook. The presence of mink within this area reduces the likelihood of water voles being present within the land required for the construction of the Proposed Scheme.
- 4.4.93 The Curborough Brook (030-WV1-188002) as it passes within the land required for the construction of the Proposed Scheme offers limited suitable habitat suitability for water voles. There is one record of water vole approximately 250m south-west of the land required for the construction of the Proposed Scheme at Tomhay Wood in 2000 (a site with connectivity to the Proposed Scheme via the Curborough Brook).
- 4.4.94 The Coventry Canal (030-WV2-183003) was considered to offer some reaches with suitable habitat features to support this species. There is one record of water vole on the Coventry Canal (2002) located approximately 1.1km north-east of the land required for the construction of the Proposed Scheme. However no evidence of this species was found as this water body passes within the survey area extent.
- 4.4.95 The Trent and Mersey Canal (030-WV2-188001), an unnamed tributary watercourse of the Fisherwick Brook (030-WV2-183001) and an unnamed tributary watercourse of the Mare Brook at Fradley Business Park (030-WV2-186001) were also considered to offer some features offering suitable habitat for water voles but no evidence of this species was found on any of these watercourses during the surveys. An unnamed tributary of the Mare Brook (030-WV1-184001), the Wyrley and Essington Canal (disused) (030-WV1-183002), the Mare Brook (030-WV1-185001) and two unnamed drains becoming tributaries of the River Trent (030-WV1-191001 and 030-WV1-192001) were all considered to offer negligible habitat suitability for water voles due to either their exposed nature with lack of cover and foraging opportunities for water vole or their dry and isolated nature.
- 4.4.96 Further drains present in Ravenshaw Wood (030-WV1-188008, 030-WV1-188009, 030-WV1-188010 and 030-WV1-1890001) were also considered to offer negligible suitability to support water voles due to either overshadowed steep earth banks or their dry nature.
- 4.4.97 Water bodies considered to have poor suitability for water vole due to their isolated and in the most part dry nature comprise two unnamed drains at unnamed drain A becomes a tributary of the River Trent 030-WV1-191001, unnamed drain B becomes a tributary of the River Trent 030-WV1-192001 and four pond features Pond to south of Trent and Mersey Canal 030-WV1-188003, northern pond at Fradley Business Park 030-WV1-186005 Black Slough Farm Drain network 030-WV1-189003 and Pond to north of Bourne Brook 030-WV1-190005.
- 4.4.98 Six water bodies (pond A to the west of unnamed watercourse at Fradley Business Park 030-WV-186007, pond B to the west of unnamed watercourse at Fradley Business Park 030-WV-186008, unnamed drain (becomes a tributary of the Pyford Brook

Catchment (tributary of River Trent)) 030-WV-189007, pond to the north of Wyrley and Essington Canal, Whittington 030-WV-183004, pond to the north of Wyrley and Essington Canal, Whittington 030-WV-183005 and pond B to the east of Fulfen Wood and 030-WV-184004) were not subject to survey. The likelihood of these water bodies offering suitable habitat for water vole is low due to the lack of confirmatory evidence of this species on surrounding watercourses and water bodies.

- 4.4.99 Despite the presence of unconfirmed water vole feeding signs on a pond at Fradley Business Park 030-WV2-186006 adjacent to an unnamed tributary of the Mare Brook, due to the confirmed presence of mink on this watercourse and the lack of further supporting evidence of this species (i.e. burrows or droppings) it is considered unlikely that there is current water vole presence on this watercourse or associated water body and thus the feeding remains are likely to be attributed to a different species (i.e. bank vole or brown hare).
- 4.4.100 Similarly no evidence of water vole activity was found on the reaches of the Bourne Brook Pond to south of Bourne Brook 030-WV2-190002 as it falls within the survey area and it is likely that the remains of a water vole present within an otter spraint is from a population located outside the land required for the construction of the Proposed Scheme.
- 4.4.101 On the basis of the survey results, supporting desk study information and reported status of water vole colonies in Staffordshire it is considered unlikely that water voles are present on the watercourses and water bodies within the Whittington to Handsacre area as they pass within the land required for the construction of the Proposed Scheme.

5 Hazel dormouse

5.1 Introduction

- 5.1.1 This section of the appendix presents a summary of the baseline data relating to hazel dormouse (*Muscardinus avellanarius*) for the section of the Proposed Scheme that will pass through CFA16 to CFA22 inclusive.

5.2 Methodology

- 5.2.1 Details of the standard methodology utilised for dormouse are provided in Ecology technical note: Ecological field survey methods and standards (Volume5: Appendix CT-001-000/2).
- 5.2.2 Desk study records relating to terrestrial invertebrates were obtained from the following sources:
- anecdotal information from local wildlife recorders during meetings arranged by Warwickshire County Council and Warwickshire Wildlife Trust in June and November 2012;
 - Warwickshire Biological Records Centre;
 - Warwickshire Wildlife Trust;
 - Warwickshire Species Action Plan for dormouse²⁰²;
 - Staffordshire Ecological Record;
 - Staffordshire Mammal Group website²⁰³ and newsletter²⁰⁴; and
 - data collected and analysed by the People's Trust for Endangered Species (PTES)²⁰⁵.
- 5.2.3 A scoping exercise was undertaken to identify potential habitat for hazel dormouse. A review of potential hazel dormouse habitat was made using aerial photography. Areas of unsuitable habitat (such as arable fields) were scoped out of further survey. Where potential habitat was present (i.e. any woody habitat and any hedges, rather than just optimal ones) the areas were subject to a site visit to assess the habitat suitability for hazel dormouse. The desk based scoping was undertaken in parallel with observations from field surveyors (from Phase I habitat survey results).
- 5.2.4 The scoping exercise noted whether areas of land were within 100m of the land required for construction of the Proposed Scheme, and not separated by a barrier, and whether the area of land, alone or in combination with adjacent habitats, was large enough to support a dormouse population.

²⁰² Bodnar (2004), Warwickshire Coventry and Solihull Local Biodiversity Action Plan, Common Dormouse; Warwickshire County Council.

²⁰³ Staffordshire Mammal Group; Dormice at Hell; staffordshiremammalgroup.co.uk/blog/?p=468; accessed 30th October 2012.

²⁰⁴ Unknown (2008), Newsletter of the Staffordshire Mammal Group No 16; Staffordshire Mammal Group.

²⁰⁵ White (2013), Dormouse monitoring throughout England and Wales, 2012; The Dormouse Monitor – newsletter of the national dormouse monitoring programme, Vol 1 p8 – 13; PTES.

- 5.2.5 For accessible areas considered suitable to support dormice during the scoping exercise an initial habitat assessment was carried out in the field. All the areas that were subject to an initial habitat assessment were carried prior to full survey.
- 5.2.6 Table 194 shows the number of dormouse tubes set out, the duration of deployment and the number of points obtained for each nest tube and nest box survey undertaken.

Table 194: Methodological details for dormouse nest tube surveys conducted within CFA16 to CFA22 inclusive

Ecology survey code	Location	Centroid grid reference	Number of tubes deployed	Survey start – survey end	Sum of indices of probability ²⁰⁶	CFA	Map series and sheet number reference
030-HD-123001	Windmill Hill Spinney and surrounding hedges, east of Ladbroke	SP 423 592	77 nest tubes (woodland) and 115 nest tubes(hedgerow) 10 nest boxes (woodland) and 5 nest boxes (hedgerow)	Windmill Hill Spinney June 2012 to May 2013, surrounding hedges October 2012 to August 2013	35	CFA16	EC-12-083 and EC-12-084
030-HD-126001	Hedges south of Harp Farm, south of Southam	SP 395 616	150 nest tubes and 5 nest boxes	March 2013 to August 2013	42	CFA16	EC-12-086
030-HD-127001	Hedges near Long Itchington and Ufton Woods Site of Special Scientific Interest (SSSI)	SP 400 625	115 nest tubes and 5 nest boxes	October 2012 to August 2013	37	CFA16	EC-12-086
030-HD-127002	Long Itchington and Ufton Woods SSSI	SP 388 627	150 nest tubes and 15 nest boxes	May 2013 to September 2013	48	CFA16	EC-12-086 and EC-12-087
030-HD-129001	Hedge along northern side of the Grand Union Canal	SP 373 638 and SP 374 639	115 nest tubes and 5 nest boxes along two sections, 230 tubes and 10 boxes in total	October 2012 to August 2013	37	CFA17	EC-12-087 and EC-12-088
030-HD-134001	South Cubbington Wood, east of Cubbington	SP 351 689	115 nest tubes Western Area, 58 nest tubes Eastern Area 5 nest boxes added in October 2012 to both areas	June 2012 to May 2013 Eastern Area and October 2012 to August 2013 Western Area	24	CFA17	EC-12-091 and EC-12-092
030-HD-138001	Woodlands and hedgerows within Stoneleigh Park (south)	SP 331 707	112 nest tubes and 5 nest boxes (South), 57 nest tubes and 5 nest boxes (North)	June 2012 to May 2013 (both woods)	37	CFA18	EC-12-093 and EC-12-094

²⁰⁶ Sum of the index of probability scores obtained for the months tubes were deployed, adjusted based on the number of tubes deployed in comparison with the standard of 50 tubes. The scores take in to account fallen nest tubes each month.

Ecology survey code	Location	Centroid grid reference	Number of tubes deployed	Survey start – survey end	Sum of indices of probability ²⁰⁶	CFA	Map series and sheet number reference
030-HD-139001	Woodlands and hedgerows within Stoneleigh Park (north)	SP 318 721	59 nest tubes and 5 nest boxes	June 2012 to May 2013	24	CFA18	EC-12-095
030-HD-142001	Woody habitat west of Wainbody Wood near Crackley	SP 305 745	150 nest tubes and 5 nest boxes	May to September 2012	51	CFA18	EC-12-096
030-HD-143001	Green Wood – Crackley Wood, north-west of Crackley	SP 289 740	86 nest tubes and 5 nest boxes	June 2012 to May 2013	38	CFA18	EC-12-097
030-HD-143002	Roughknowles Wood, north-west of Crackley	SP 288 749	93 nest tubes and 5 nest boxes	June 2012	40	CFA18	EC-12-097 and EC-12-098
030-HD-144001	Broadwells Wood, south-east of Burton Green	SP 281 754	150 nest tubes and 5 nest boxes	March 2013 to August 2013	42	CFA18	EC-12-098
030-HD-146001	Black Waste Wood, Little Poors Wood, Kenilworth Greenway and nearby hedges, Burton Green	SP 270 757	235 nest tubes and 10 nest boxes (Black Waste Wood, Little Poors Wood and nearby hedges). 150 nest tubes (Kenilworth Greenway)	July 2012 to May 2013 (Black Waste Wood and adjacent hedges) March to August 2013 (Kenilworth Greenway) October 2012 to August 2013 (hedges nearby)	42	CFA18	EC-12-098, EC-12-099 and EC-12-100a
030-HD-161001	Coleshill Manor Office Campus	SP 185 897	150 nest tubes and 5 nest boxes	March to August 2013	40	CFA19	EC-12-110, EC-12-133 and EC-12-134
030-HD-167001	Dunton Wood, north-east of M42 Junction 9	SP 194 945	150 nest tubes and 5 nest boxes	March to August 2013	36	CFA20	EC-12-113 and EC-12-119
030-HD-168001	Plantation woodland around Cuttlemill Fisheries, north-west of M42	SP 189 950	60 nest tubes and 5 nest boxes	June 2012 to May 2013	25	CFA20	EC-12-113

Ecology survey code	Location	Centroid grid reference	Number of tubes deployed	Survey start – survey end	Sum of indices of probability ²⁰⁶	CFA	Map series and sheet number reference
030-HD-170001	Coneybury Wood and hedges near Middleton Hall, east of Middleton	SP 192 975	150 nest tubes	March to August 2013	42	CFA20	EC-12-114 and EC-12-115
030-HD-171001	Hedges near Middleton	SP 176 988	150 nest tubes	March to August 2013	41	CFA20	EC-12-115, EC-12-116a and EC-12-116b
030-HD-174001	Hedges near Bangley Lane (locally known as Waggoner's Lane), south of Hints	SK 170 004	150 nest tubes	May to September 2013	46	CFA21	EC-12-117 and EC-12-118
030-HD-176001	Roundhill Wood, south of Hints	SK 158 023	57 nest tubes and 5 nest boxes	June 2012 to May 2013	25	CFA21	EC-12-120
030-HD-177001	Hedges and wood at Moor Covert, south-west of Packington Moor	SK 145 054	150 nest tubes and 5 nest boxes	March to August 2013	40	CFA21	EC-12-121 and EC-12-122
030-HD-181001	Whittington Heath Golf Course	SK 147 076	60 nest tubes and 5 nest boxes	June 2012 to May 2013	25	CFA22	EC-12-123a, EC-12-123b, EC-12-124 and EC-12-124-LI
030-HD-187001	Woody areas south of Trent and Mersey Canal	SK 131 130	150 nest tubes and 5 nest boxes	March to August 2013	41	CFA22	EC-12-127
030-HD-188001	Ravenshaw Wood and hedges	SK 125 138	78 nest tubes and 5 nest boxes in Ravenshaw Wood 120 nest tubes and 5 nest boxes in nearby hedges	June 2012 to May 2013 (Ravenshaw wood) and October 2012 to August 2013 (adjacent hedges)	35	CFA22	EC-12-128
030-HD-188002	Fradley Wood and hedges	SK 135 135	150 nest tubes and 5 nest boxes	March to August 2013	42	CFA22	EC-12-127 and EC-12-128
030-HD-189001	Black Slough Wood	SK 117 141	97 nest tubes and 5 nest boxes	June 2012 to May 2013	42	CFA22	EC-12-128 and EC-12-129
030-HD-190001	John's Gorse and hedges, south of Handsacre	SK 109 143	240 nest tubes and 10 nest boxes	October 2012 to August 2013	27	CFA22	EC-12-129

5.3 Deviations, constraints and limitations

- 5.3.1 The weather during the dormouse survey season in 2012 was unusually wet which may have affected dormouse behaviour and reduced the probability of finding them during surveys. Data collected and analysed by the People's Trust for Endangered Species showed that in the Midlands records of dormice in 2012 were over two thirds lower than in 2007²⁰⁷. In order to minimise the potential constraint of bad weather to survey findings all dormouse surveys included at least two of the three most active months for dormice, and several of the surveys that started in 2012 were extended into 2013 with the final visit in May. May, August and September are the highest scoring months in the 'index of probability' for detecting dormice²⁰⁸.
- 5.3.2 Within several of the survey areas dormouse nest tubes were disturbed by weather or members of the public. This was in low number and did not compromise the survey effort. The survey effort (based on the index of probability for detecting dormice) was above the minimum score of 20 for each site surveyed, even when missing nest tubes were taken in to account.
- 5.3.3 Due to access restrictions there are eight areas of land that were scoped in for survey, based on desk study, but where no access was available. These areas are detailed under the relevant CFA heading below and are shown on map series EC-12-079 to EC-12-134. There were surveys carried out adjacent to five of these areas, and therefore access restrictions are not considered to be a significant survey limitation as the five adjacent survey areas are likely to inform dormouse presence/absence.

Table 195: Survey areas with potential for hazel dormouse to be present, but survey access was not granted

Ecology survey code	Location	Centroid grid reference	CFA	Distance from the land required for construction of the Proposed Scheme ²⁰⁹ (m)	Map series and sheet number reference
030-HD-116001	Berryhill Plantation near the Northamptonshire border	SP 46429 53969	CFA16	Adjacent to land required	EC-12-079b
030-HD-120001	Woodland patches near the fish ponds at Lower Radbourne	SK 43979 56970	CFA16	Within land required	EC-12-081 and EC-12-082
030-HD-121001	Woodland near to and including Ladbroke Fox Covert, east of Ladbroke	SP 43047 58224	CFA16	Within land required	EC-12-082 and EC-12-083
030-HD-127003	Bascote Heath Wood, south of Long Itchington and Ufton Woods SSSI	SP 39221 62442	CFA16	The Proposed Scheme passes beneath this area in tunnel	EC-12-086
030-HD-129002	Woodland adjacent to the Grand Union Canal	SP 38253 63903	CFA17	Within land required	EC-12-087 and EC-12-088
030-HD-131002	Woody habitat along Offchurch Greenway and within Sutton Spinney	SP 37067 65848	CFA17	Within land required	EC-12-089

²⁰⁷ White (2013), Dormouse monitoring throughout England and Wales, 2012; The Dormouse Monitor – newsletter of the national dormouse monitoring programme, Vol 1 p8 – 13; PTES.

²⁰⁸ Bright, Morris, Mitchell-Jones (2006), The Dormouse Conservation Handbook, Second Edition; English Nature.

²⁰⁹ Hereafter the term 'land required' is used as a shortened version of the full term 'land required for the construction of the Proposed Scheme'.

Ecology survey code	Location	Centroid grid reference	CFA	Distance from the land required for construction of the Proposed Scheme ²⁰⁹ (m)	Map series and sheet number reference
030-HD-135001	South Cubbington Wood, east of Cubbington	SP 35211 68502	CFA17	Adjacent to land required	EC-12-091 and EC-12-092
030-HD-143004	Northern area of Crackley Wood, north-west of Crackley	SP 29071 74334	CFA18	Adjacent to land required	EC-12-097
030-HD-176002	Rookery (wood), south of Hints	SK 15623 02579	CFA21	Within land required	EC-12-120
030-HD-177002	Snake's Hill Wood, north-west of Hints	SK 15420 03182	CFA21	Within 100m of land required	EC-12-120

5.4 Baseline

Overview

- 5.4.1 Detailed hazel dormouse surveys have been carried out within 27 areas within CFA16 to CFA22. No hazel dormice or evidence of the species has been found to date.
- 5.4.2 Warwickshire and Staffordshire are at the north-western boundary of the known range of the hazel dormouse within the United Kingdom (UK) and there are very few records of hazel dormice within either County²¹⁰.
- 5.4.3 A communication from the chairman for the Staffordshire mammal group to the PTES dormouse forum, 24 October 2012, stated that a live hazel dormouse has not been found in Staffordshire for three years, with only an empty nest or characteristically gnawed hazel nut to confirm they are still present in the County.
- 5.4.4 In Warwickshire, desk study records in proximity to the land required for construction of the Proposed Scheme are concentrated around the Princethorpe Woods complex of ancient woodlands which includes Western and Waverley Wood, east of the Proposed Scheme in the Offchurch and Cubbington area (CFA17). Warwickshire Dormouse Group have been surveying hedgerows around the Princethorpe Woods complex to find out if dormice are using hedgerows to move to and from woodlands where they are known to be present. These surveys have found no evidence of dormouse to date.
- 5.4.5 Below is a summary of the desk study records for CFA16 to CFA22 together with information on areas scoped as being potentially suitable to support hazel dormouse and whether surveys were possible in these areas. Based on the desk study results and survey results it is unlikely for dormice to be present within the areas where access restricted survey.

CFA16 Ladbroke and Southam

- 5.4.6 The Warwickshire, Coventry and Solihull Biodiversity Action Plan (BAP) states that hazel dormouse was found in 1999/2001 during surveys by Natural England in Long

²¹⁰ Bright, P., Morris, P. and Mitchell-Jones, T. (2006), *The Dormouse Conservation Handbook, Second Edition*. Peterborough: English Nature; and Harris, S. and Yalden, D. W. (2008), *Mammals of the British Isles, Handbook, 4th Edition* Southampton: The Mammal Society.

Itchington and Ufton Woods SSSI; Warwickshire Biological Records Centre have a record (from 2000) of a dormouse gnawed hazel nut for the SSSI.

5.4.7 Print Wood, approximately 600m east of the Proposed Scheme, has records of a dormouse gnawed hazel nut (from 2002) and a hibernating dormouse (2009) but surveys in 2010/11 have found no signs of dormice. There are hedgerow connections to the woody habitat within the land required for construction of the Proposed Scheme.

5.4.8 There are ten areas that support woody habitat suitable for dormice within 100m of the land required for construction of the Proposed Scheme within this area. No dormice or evidence of the species has been found. The areas where access prevented surveys are relatively small, with no previous records of the species. As hazel dormouse has not been found within the most extensive and optimal habitat (e.g. Long Itchington and Ufton Woods SSSI) where previous records exist, the species is not expected to be present within the areas with no access.

- Berryhill Plantation (no access). Surveys in the adjacent Fox Covert (Glyn Davis Wood) in the Greatworth to Lower Boddington area (CFA15) found no evidence of dormice;
- woodland patches near the fish ponds at Lower Radbourne (no access);
- woodland near to and including Ladbroke Fox Covert, east of Ladbroke (no access);
- Windmill Spinney near Ladbroke Hill Farm (survey completed);
- hedges south of Harp Farm (survey completed);
- Long Itchington and Ufton Woods SSSI and adjacent patches of woodland and hedges south of the SSSI in Dallas Burston Polo Club (survey completed); and
- Bascote Heath Wood, south of Long Itchington and Ufton Woods SSSI (no access).

CFA17 Offchurch and Cubbington

5.4.9 The closest records are from the Princethorpe Woods complex over 500m to the east of the Proposed Scheme (the complex includes Weston, Wappenbury and Ryton Woods). Weston Wood is described in the Warwickshire BAP as the only known remaining woodland with dormice prior to 1999, since which time new sites have been found to support hazel dormouse. There are 53 historic records of hazel dormouse at Weston Woods, with an additional 142 records. Many of the records include breeding dormice as well as their nests. Wappenbury Wood has two records for this wood, with no additional information given. Ryton Wood SSSI is described in the Warwickshire BAP as having potential to support hazel dormouse, with unconfirmed (nest) evidence of hazel dormouse being present.

5.4.10 All of these woodlands are over 500m east of the Proposed Scheme. However, there is connecting woody habitat suitable for dormouse between Weston Wood and South Cubbington Wood.

- 5.4.11 Warwickshire Dormouse Group have been surveying hedgerows around Princethorpe Woodlands Complex to find out if dormice are using hedgerows to move to and from woodlands where they are known to be present. These surveys have found no evidence of dormouse to date.
- 5.4.12 The following areas of woody habitat were identified as having potential for hazel dormouse to be present within 100m of the land required for construction of the Proposed Scheme within this area and surveys have been completed within two of them:
- South Cubbington Wood (survey carried out in part of the woodland adjacent to Proposed Scheme although the southern areas of South Cubbington Wood within the land required for construction of the Proposed Scheme had no access);
 - in hedges adjacent to the Grand Union Canal (survey carried out) and adjacent woody habitat (no access); and
 - in woody habitat along Offchurch Greenway and within Sutton Spinney (no access).
- 5.4.13 No dormice or evidence of the species has been found. The areas where access prevented surveys are relatively small, with no previous records of the species. As hazel dormouse has not been found within the most extensive and optimal habitat (e.g. Long Itchington and Ufton Woods SSSI) where previous records exist nor in South Cubbington Wood which has links to other areas with previous records of the species, the species is not expected to be present.
- CFA18 Stoneleigh, Kenilworth and Burton Green**
- 5.4.14 Ryton Wood SSSI is described in the Warwickshire BAP as having potential to support hazel dormouse, with unconfirmed (nest) evidence of hazel dormouse being present. Ryton Wood is part of the Princethorpe Woodlands Complex; these woodlands are all located over 1km from the Proposed Scheme within CFA18. Waverley Wood is also part of the Princethorpe Woodland complex. Waverley Wood is adjacent to and connected to Weston Wood in the south (Weston Wood falls within the Offchurch and Cubbington area (CFA17)), for which there are numerous records. In Bubbenhall Wood there is a record of hazel dormouse with a release of 60 individuals from Royal Holloway University. Surveys in 2005 and 2008 by the PTES found no evidence of hazel dormouse within the woodland.
- 5.4.15 There are nine woody areas with potential to support dormice within 100m of the land required for construction of the Proposed Scheme within the Stoneleigh, Kenilworth and Burton Green area (CFA18). Surveys were carried out within eight of these areas, but not within the northern area of Crackley Wood (as no access was granted). No dormice or evidence of the species has been found. This area where access prevented surveys is relatively small and has no previous records of the species. As hazel dormouse has not been found within the most extensive and optimal habitat (e.g. Long Itchington and Ufton Woods SSSI) where previous records exist, the species is not expected to be present within it.

CFA19 Coleshill Junction

- 5.4.16 There are no records of hazel dormouse within this area. There is limited woody habitat with potential to support hazel dormouse within 100m of the land required for construction of the Proposed Scheme. One area, in the vicinity of Coleshill Manor Office Campus, was considered to have potential and has been surveyed. No dormice or evidence of the species was found.

CFA20 Curdworth and Middleton

- 5.4.17 There are records of dormouse within Kingsbury Wood SSSI over 3km to the east of the Proposed Scheme (gnawed hazel nut). There is no connecting woody habitat between Kingsbury Wood SSSI and the land required for the construction of the Proposed Scheme.
- 5.4.18 There are four areas of woody habitat within 100m of the land required for construction of the Proposed Scheme within this area with potential to support hazel dormouse, and surveys were possible within all of the areas and all have been completed. No dormice or evidence of the species has been found.

CFA21 Drayton Bassett, Hints and Weeford

- 5.4.19 There is an unconfirmed record of hazel dormouse at Hopwas Hayes Wood, which is approximately 1.5km east of the Proposed Scheme. Analysis of aerial photography shows there is some limited woody habitat connecting Hopwas Hayes Wood to the habitat within the land required for construction of the Proposed Scheme. There is one record of hazel dormouse at Kingsbury Wood (gnawed hazel nut), which is over 5km south-east of the Proposed Scheme. Analysis of aerial photography shows Kingsbury Wood is not connected to the habitat within the land required for the construction of the Proposed Scheme.
- 5.4.20 There are five areas of woody habitat with potential to support dormouse within 100m of the land required for construction of the Proposed Scheme within this area:
- near Roundhill Wood (survey complete);
 - hedges near Moor Covert (survey complete);
 - hedges near Bangley Lane (locally known as Waggoner's Lane) (survey complete);
 - Rookery Wood (no access but surveys carried out in vicinity at Roundhill Wood); and
 - Snake's Hill Wood (no access).
- 5.4.21 No hazel dormouse or evidence of the species has been found to date during the surveys within the study area. In Rookery Wood where access prevented surveys is relatively small and has no previous records of the species. The species is not expected to be present within this area.

CFA22 Whittington to Handsacre

- 5.4.22 There is an unconfirmed record of hazel dormouse at Hopwas Hayes Wood, which is approximately 1.5km east of the land required for construction of the Proposed

Scheme. Analysis of aerial photography shows there is some limited woody habitat connecting Hopwas Hayes Wood to the habitat within the land required for construction of the Proposed Scheme.

- 5.4.23 There are six areas identified with potential to support dormouse within 100m of the land required for construction of the Proposed Scheme within this area. At each of these dormouse surveys have been carried out and completed. No hazel dormice or evidence of the species has been found to date.